



## Natural Formation Evaluation

### Gamma Ray

## LWD REALTIME LOG

Scale:	Company: Anadarko					
1:240 MD	Well: ALVIN 27G-29HZ					
Depth Reference:	Field: WELD COUNTY (UTM/TRUE NORTH)					
Driller's Depth	County:		Weld County		State: Colorado	
Status:	Surface Location:			Other Services:		
Final Print	Latitude:			040° 06' 11.160" N		
API No: 051234220900	Longitude:			104° 40' 46.377" W		
Job ID: 7693408	SEC: 29		TMN: 2N		RGE: 65W	
Permanent Datum (P.D.):	Ground Level		Elevation:		4909.00 ft	
Log Measured From:	Rig Floor		Above P.D.		16.00 ft	
Dates	Interval Logged			Magnetic Field Reference		
Date From: 2015-12-17	Top: (ft) 6000.00		Azi Reference North: True		Dip Angle: (deg) 66.75	
Date To: 2015-12-19	Bottom: (ft) 12833.00		Total Magnetic Field Strength: (nT)		52646	
Spud Date: 2015-12-16				Mag to Reference North Correction: (deg)		8.10 E
Borehole Record				Casing Record		
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
8.500	1930.00	12833.00	9.625	36.00	16.00	1920.00
Mud Record						
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Incl   Az (Start)	Incl   Az (End)
Oil Based Mud	1930.00	12833.00	8.500	10903.00	19.72   225.24	89.91   359.97
Acquisition System      Software Version      Other						
Baker Hughes Cadence	G3.2		Rig: Xtreme 24			
Plot Studio	3.2.7268.7		Contractor: Xtreme Drilling		Unit: D & E	
			District: RMD			

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Log Run Summary

Run No	Bit Run No.	Bit Size (in)	Bit Type	Bit Gauge Length (in)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours (h)
						Top	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	1	8.500	PDC	2.00	Motor	1890.00	12793.00	1930.00	12833.00	2015-12-16 20:18	2015-12-19 00:31	48.09

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
Adam Harris		2015-12-16	2015-12-19	Matthew Leopold		2015-12-16	2015-12-19	Mauricio Garcia		2015-12-16	2015-12-19
Ryan Kielian		2015-12-16	2015-12-19								

Mud Properties Record

Date / Time	Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2015-12-16 18:00	1	1930.00	Oil Based Mud	9.1	17	N/A	7.1	68.1/31.9	Active Pit	45500	0.00
2015-12-17 18:00	1	7194.00	Oil Based Mud	9.3	16	N/A	8.0	67.0/33.0	Active Pit	49000	0.00
2015-12-18 18:00	1	11789.00	Oil Based Mud	9.7	19	N/A	8.4	68.4/31.6	Active Pit	45000	0.00

Equipment and Service Data

Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)
1	NaviGamma	12595928	Gamma (single)	9.75	40.14	6.750	2.750
1	NaviGamma	12595928	Directional (mag)	13.16	43.55	6.750	2.750
1	NaviGamma	12595928	VSS	13.16	43.55	6.750	2.750

Comments


- 1
- Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes INTEQ. Due to the lack of control by Baker Hughes INTEQ logging engineers, depth calibrations and measurements could not be independently verified.
- 2
- A sliding indicator is shown to the left edge of track 1 as a heavy line. The indicator has been depth-shifted to the Gamma Ray sensor offset to correspond with Gamma Ray data acquired while sliding.
- 3
- Baker Hughes INTEQ run 1 utilized a 6.750 inch NaviGamma (Directional and Gamma Ray) tool behind an 8.500 inch bit and steerable assembly from 1930.00 to 12833.00 feet MD (1892.42 to 7117.31 feet TVD).

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	6000.00	8.500	1	Drilling data is not shown in the interval from surface to 6000.00 feet MD (5809.81 feet TVD) due to directional only services.
2	12793.00	8.500	1	The interval from 12793.00 to 12833.00 feet MD (7117.25 to 7117.31 feet TVD) was not logged due to sensor to bit offset at well TD.

Curve Mnemonics

Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
GRAX	Gamma Ray - Apparent 0.5 ft Average	API
GRIX	Gamma Ray - Data Point Indicator	unitless
GRTX	Gamma Time Since Drilled	min
GRSI	Sliding Indicator Flag	unitless
TCDX	Downhole Temperature	degF
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb



Company

Well

Interval

Created

Anadarko

ALVIN 27G-29HZ

Date From:

2015-12-17 10:00

Date To:

2015-12-19 00:31

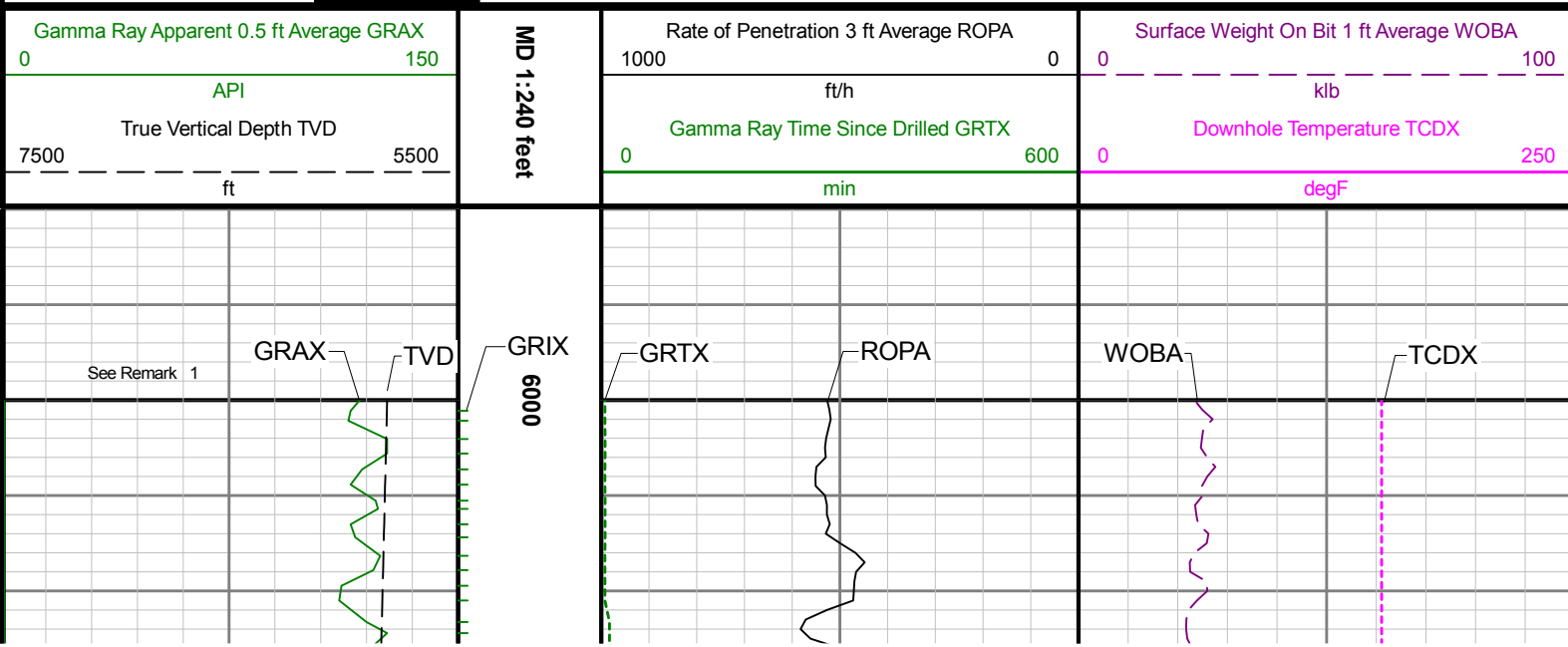
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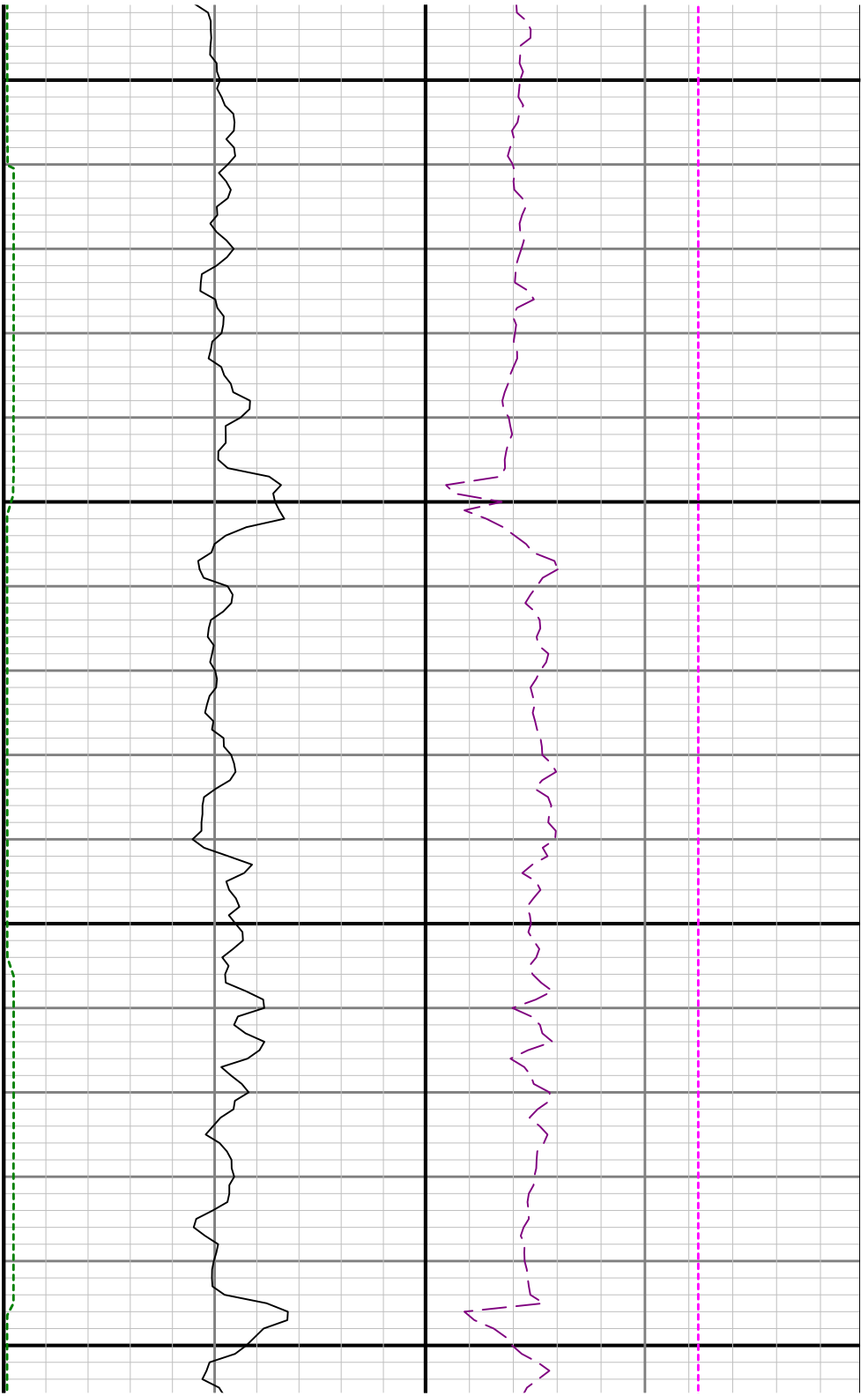
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12833.00

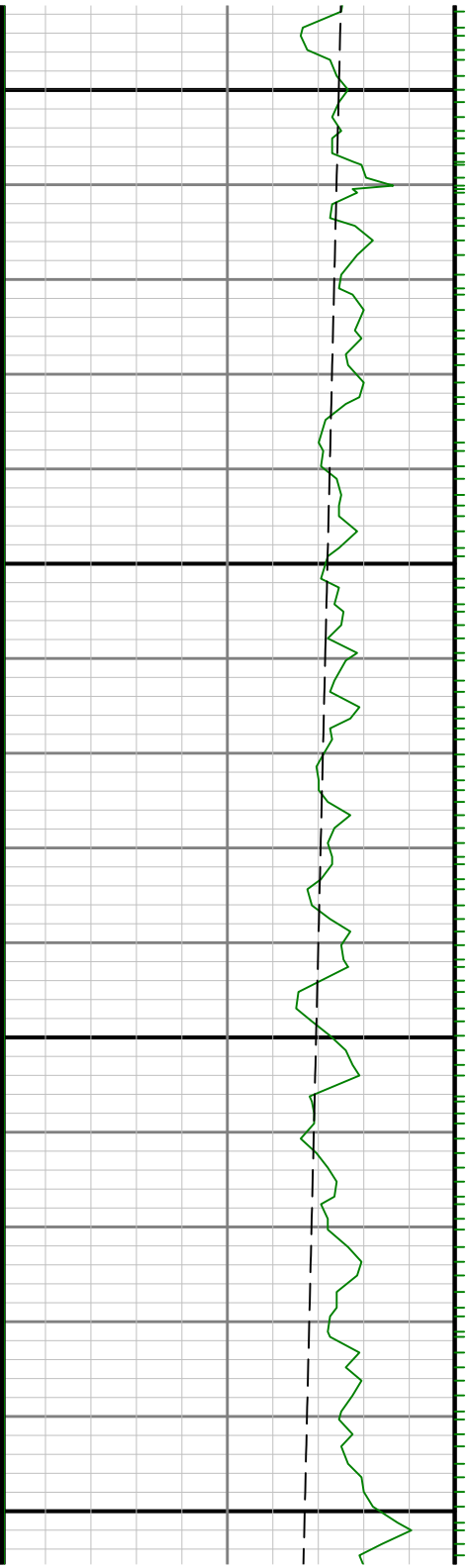


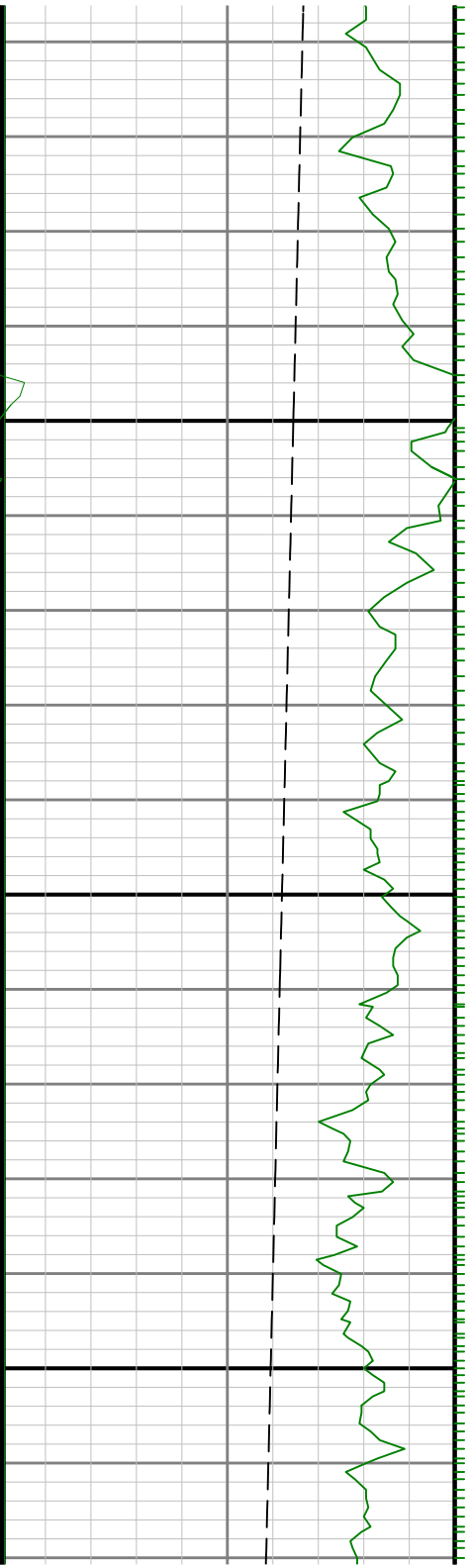




6200

6300

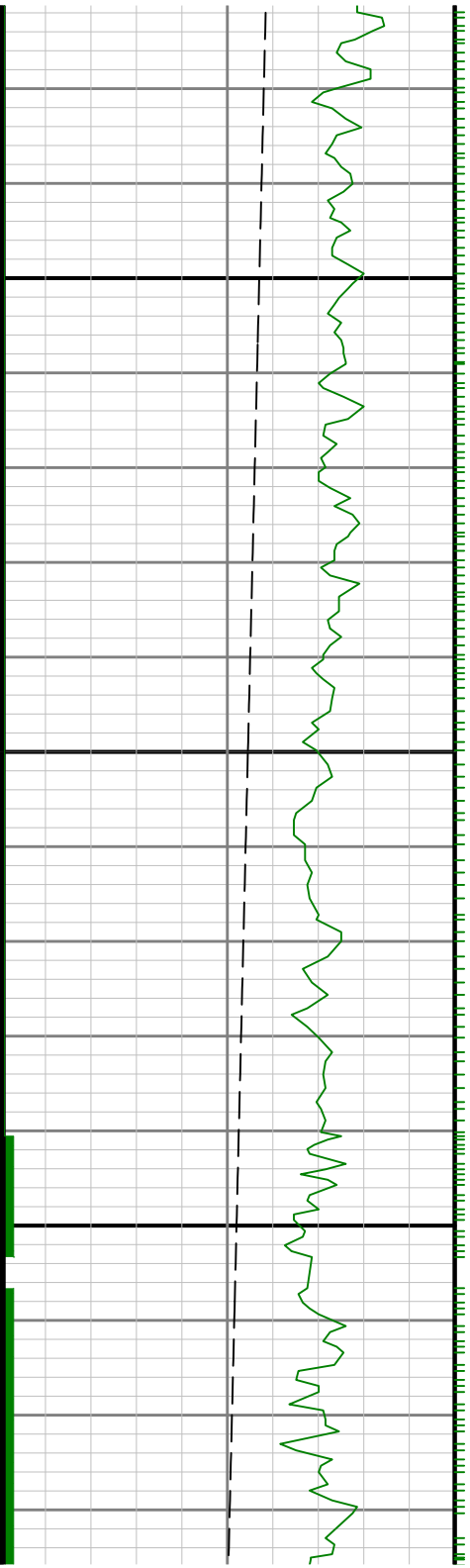




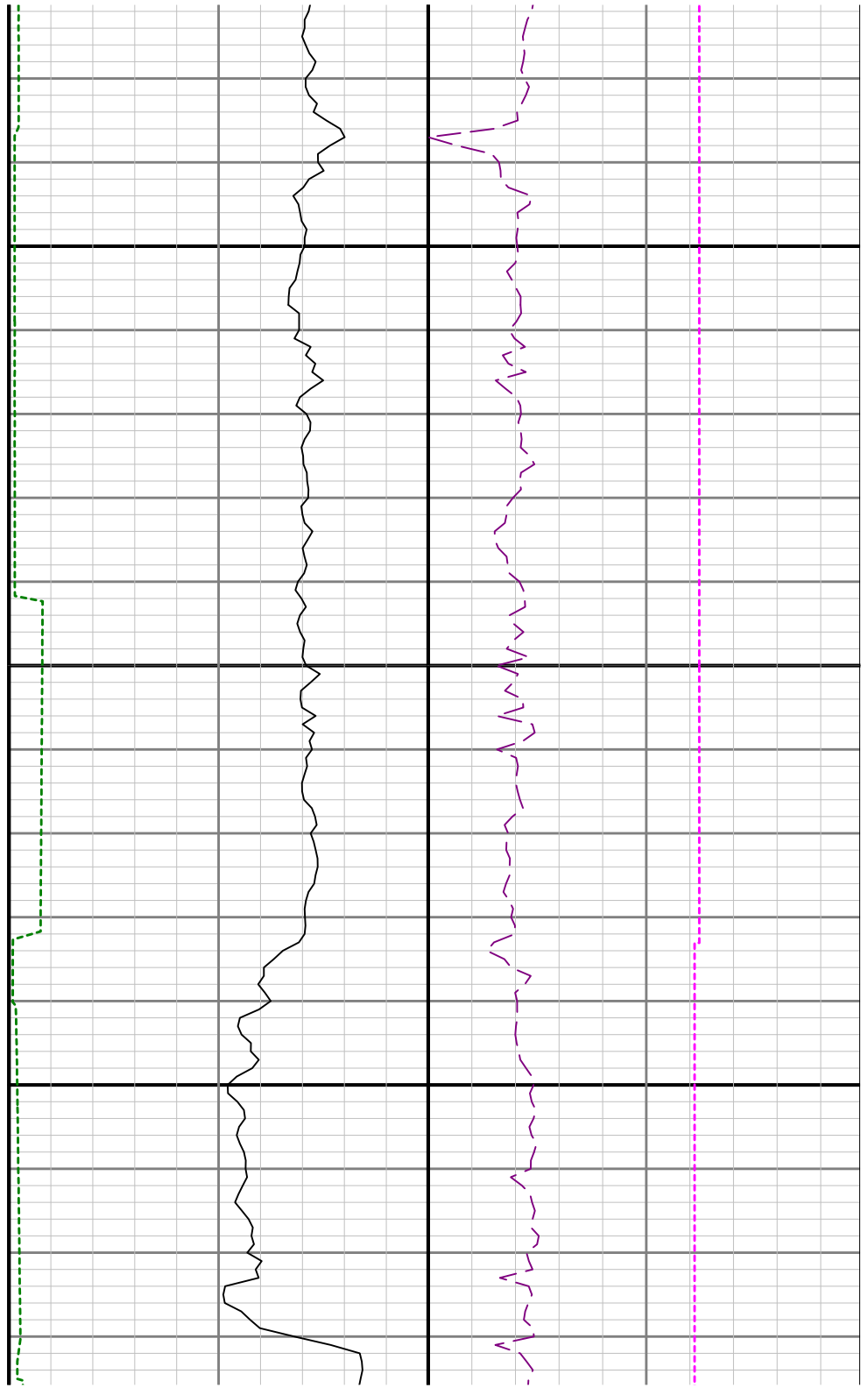
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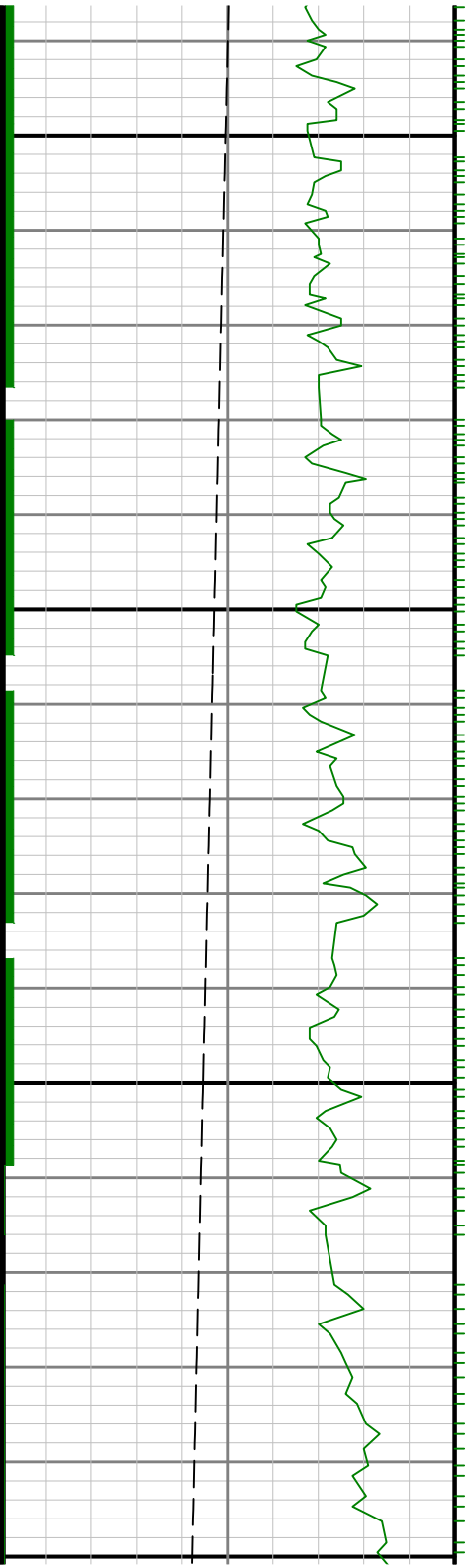
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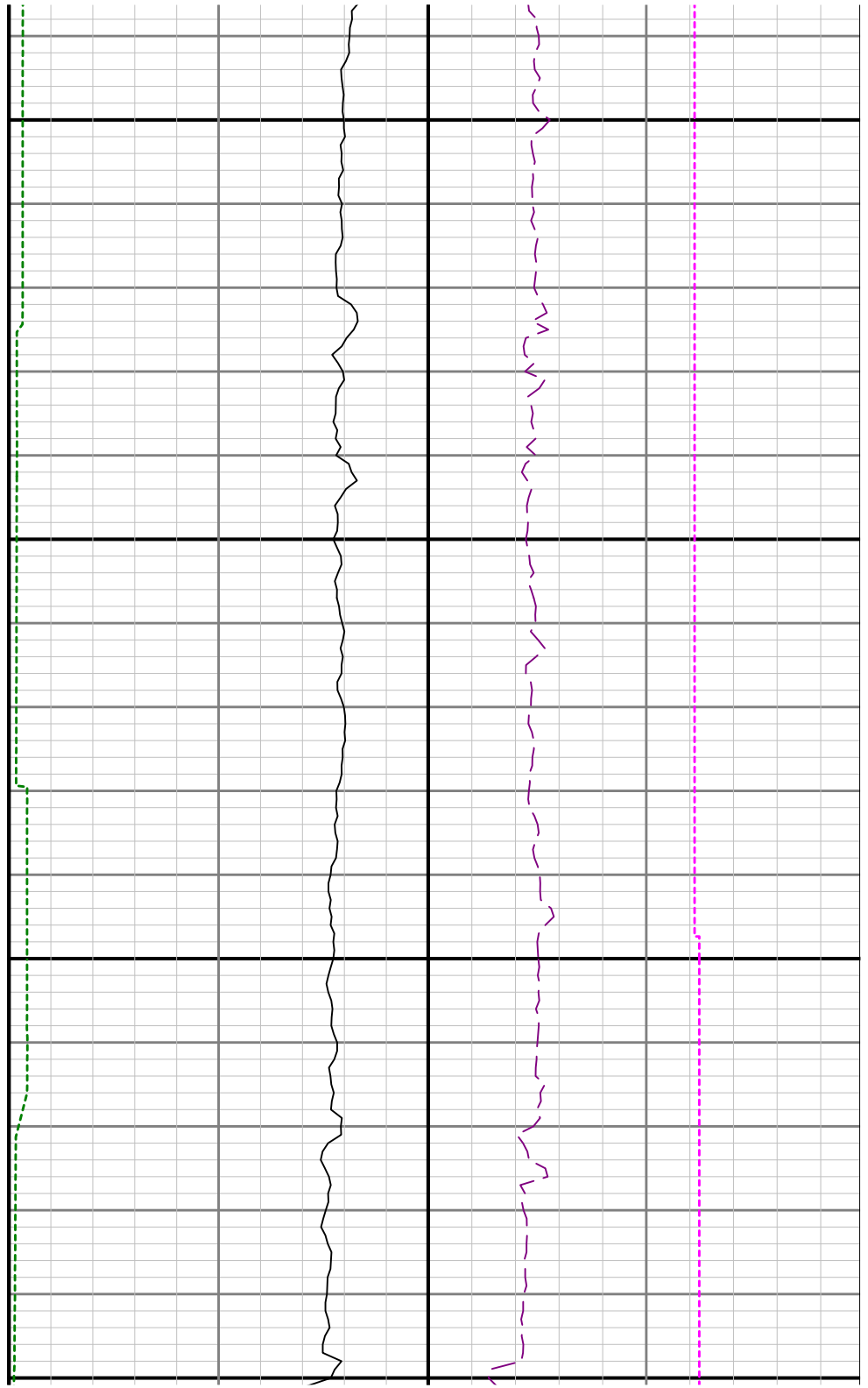
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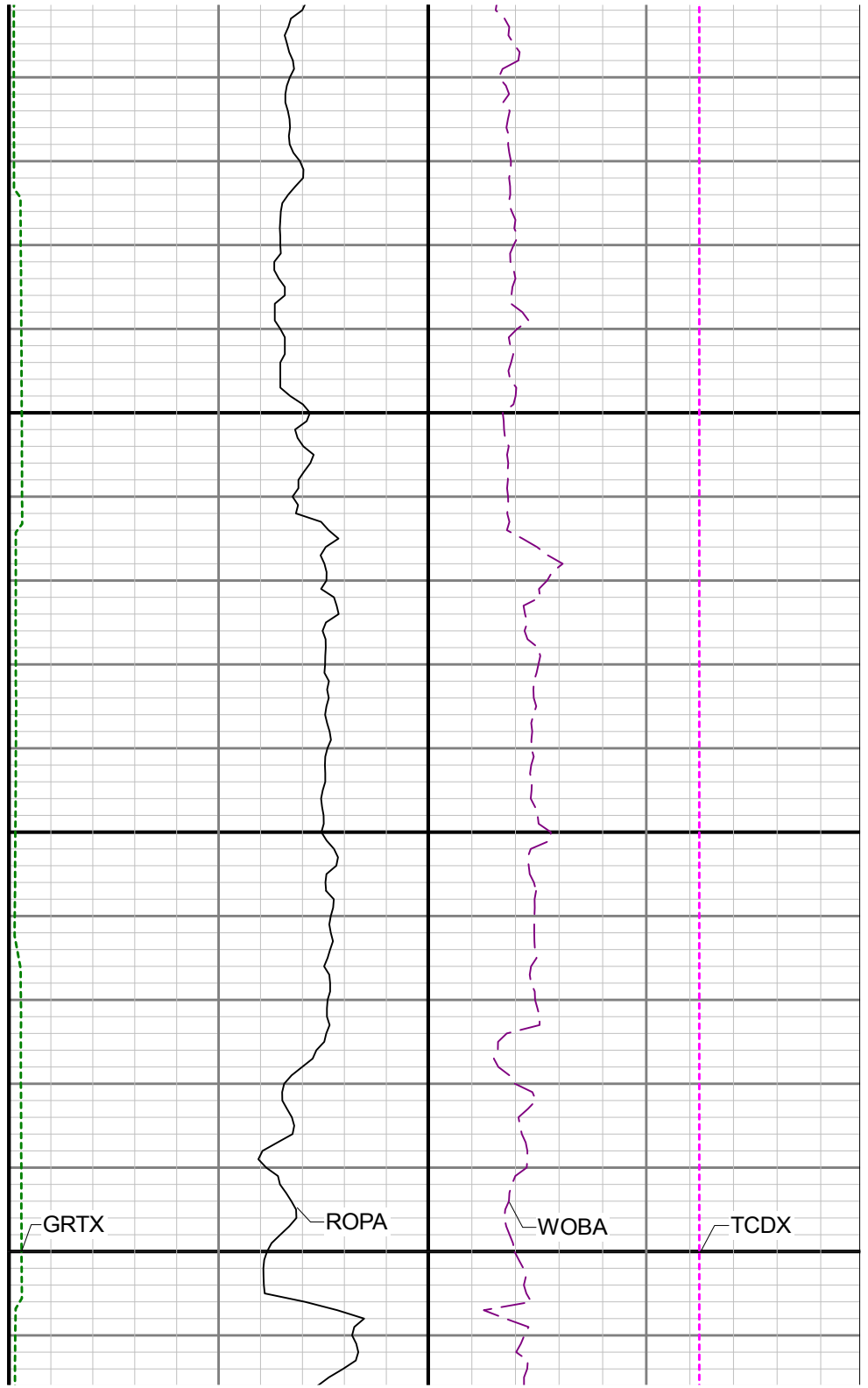
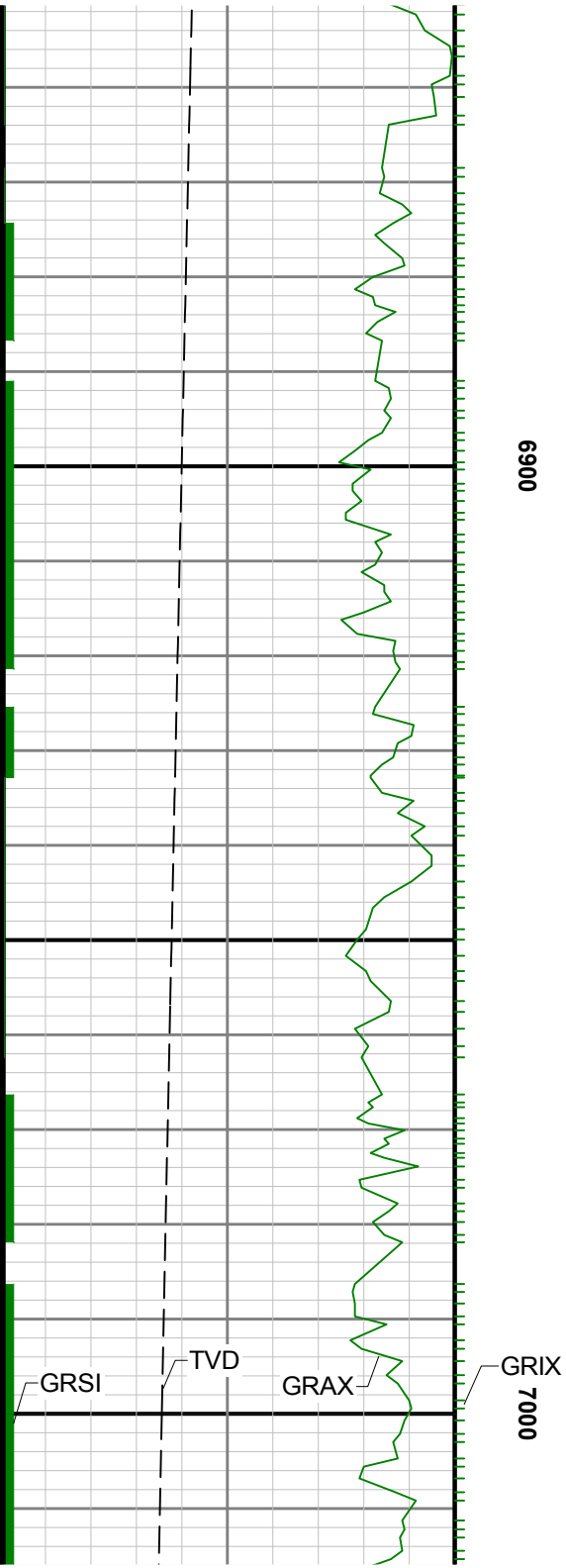


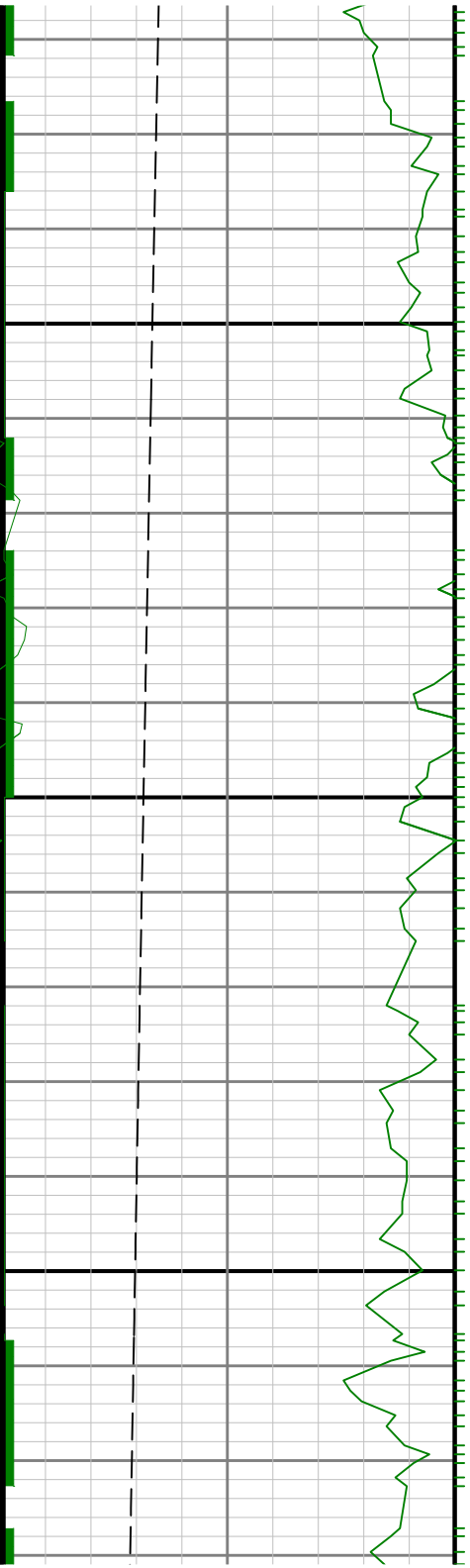
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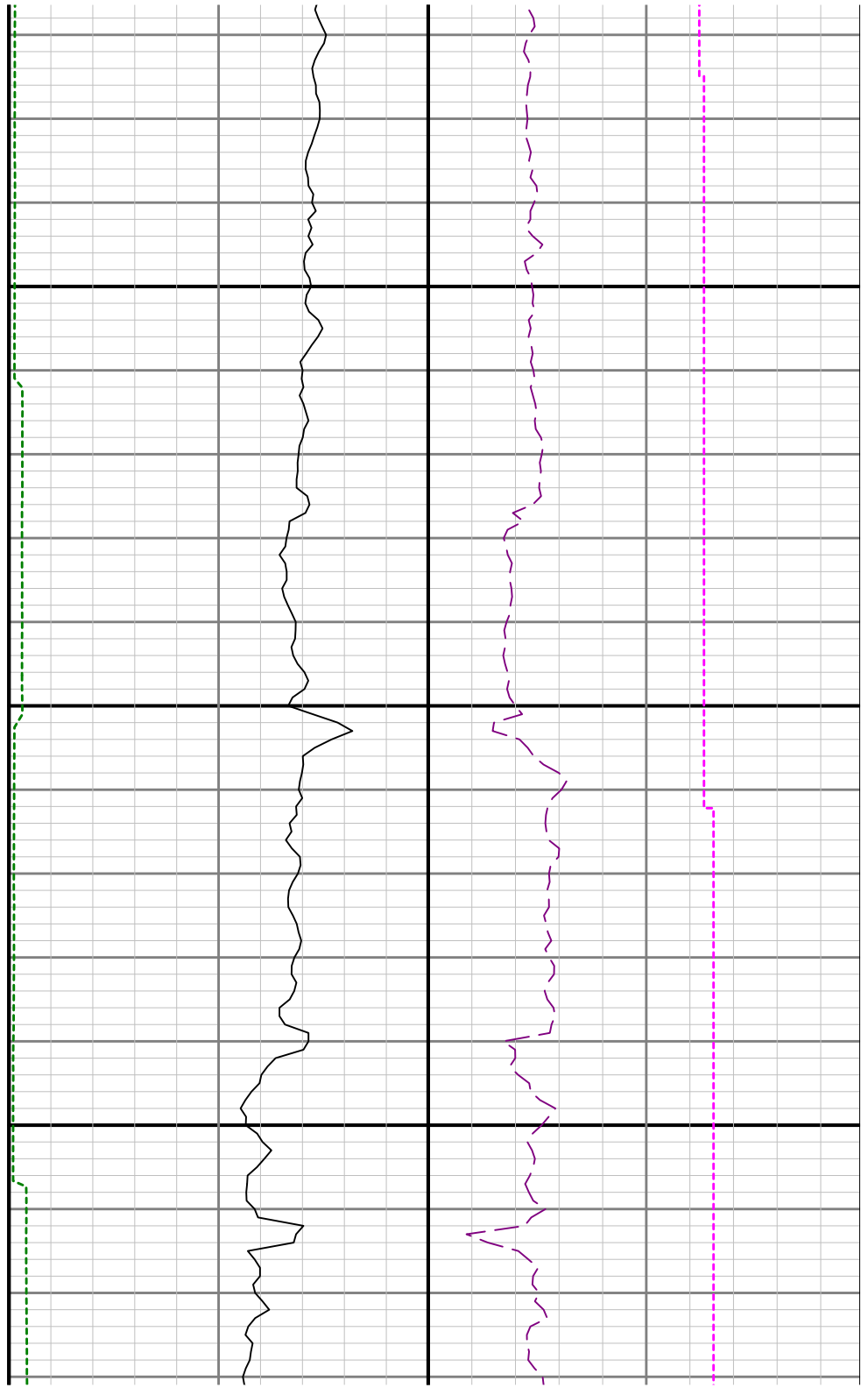


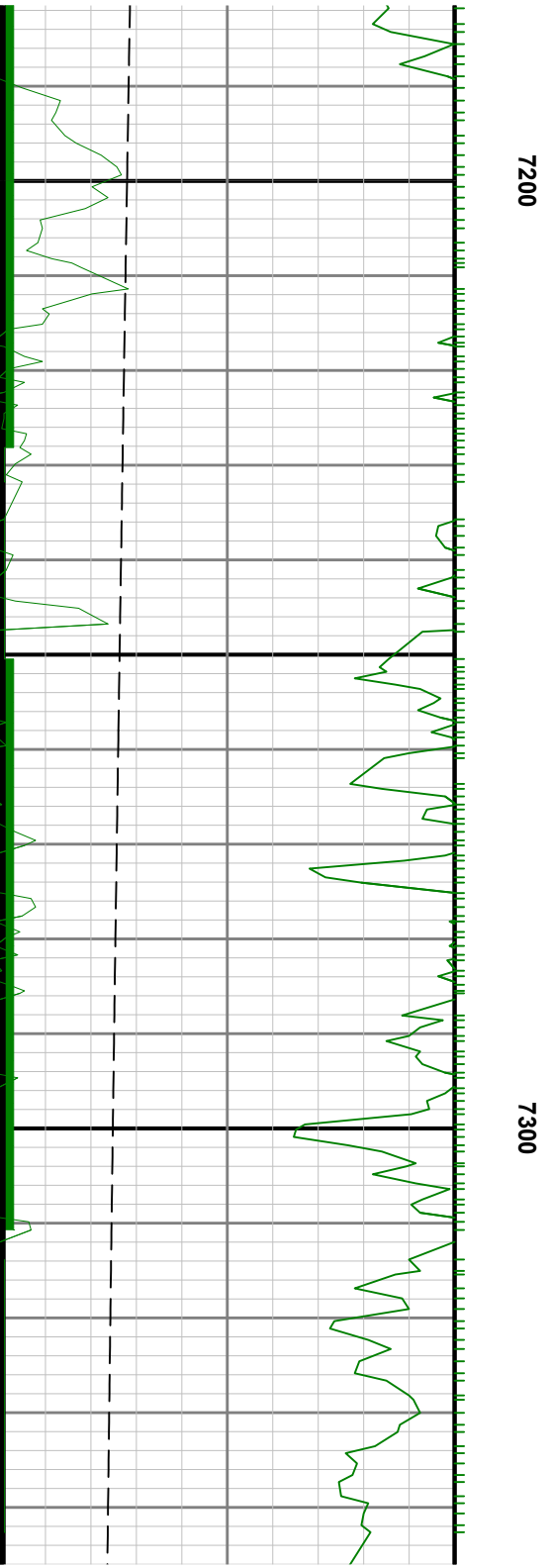


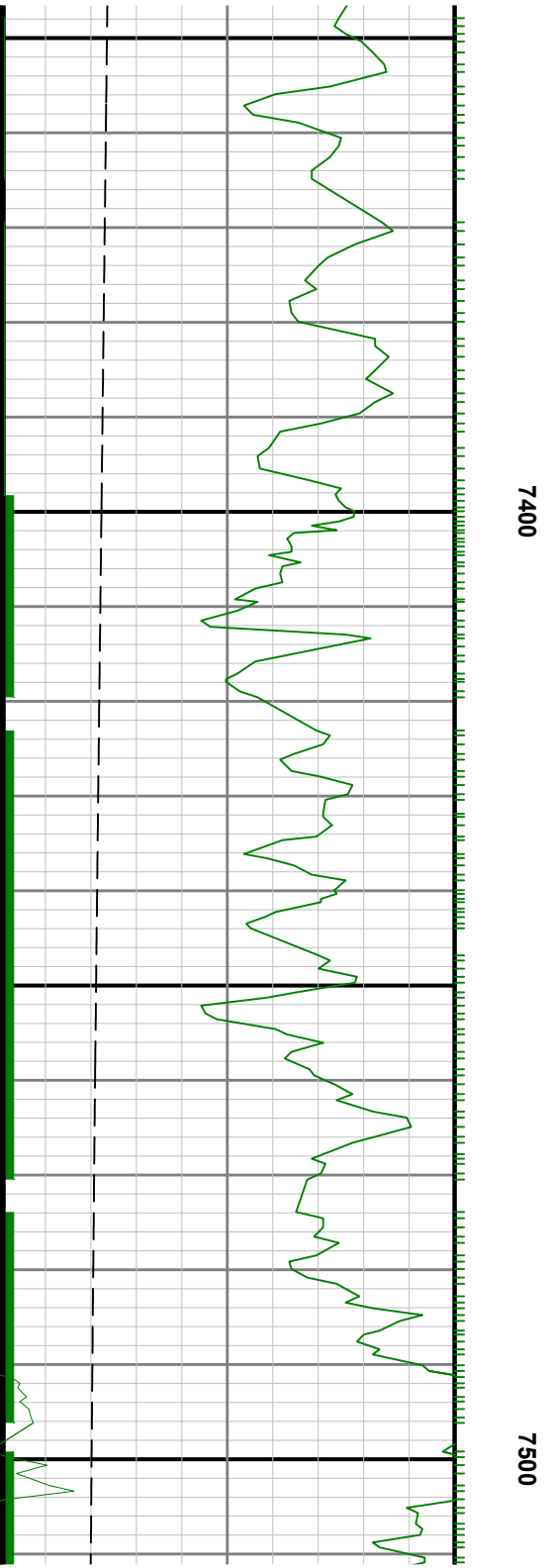
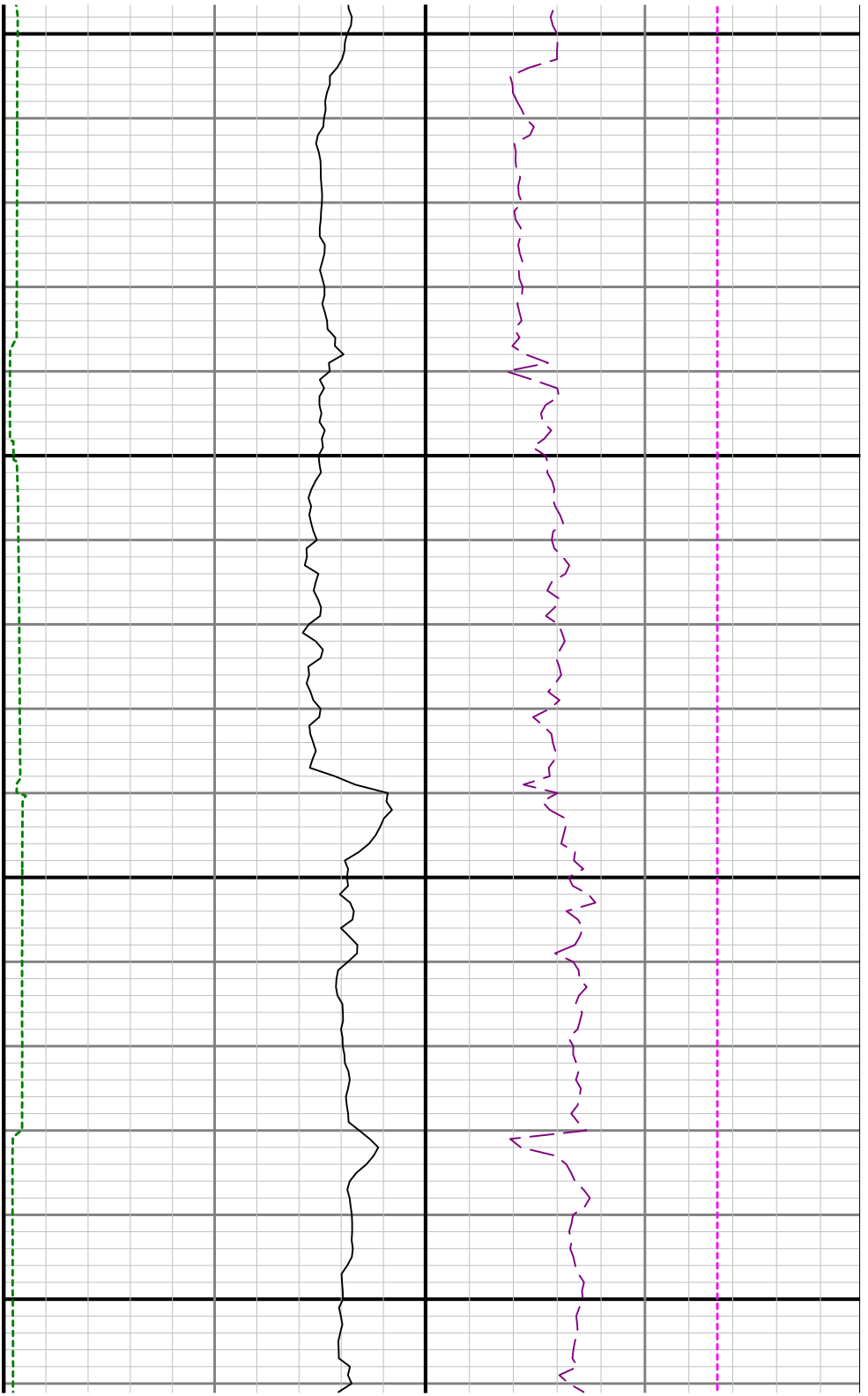


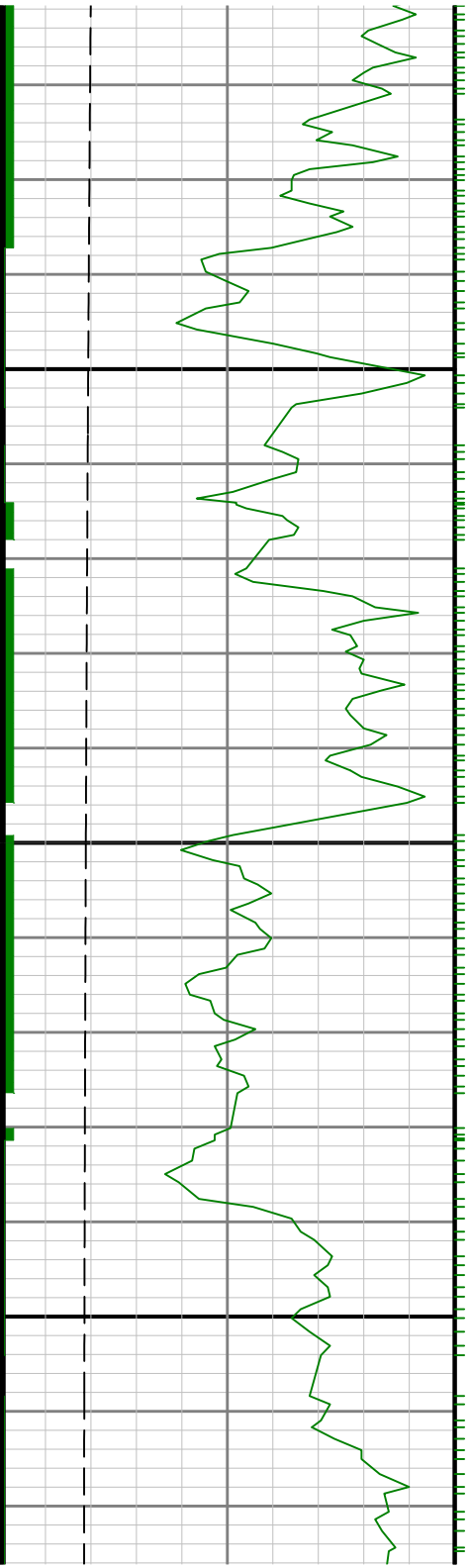


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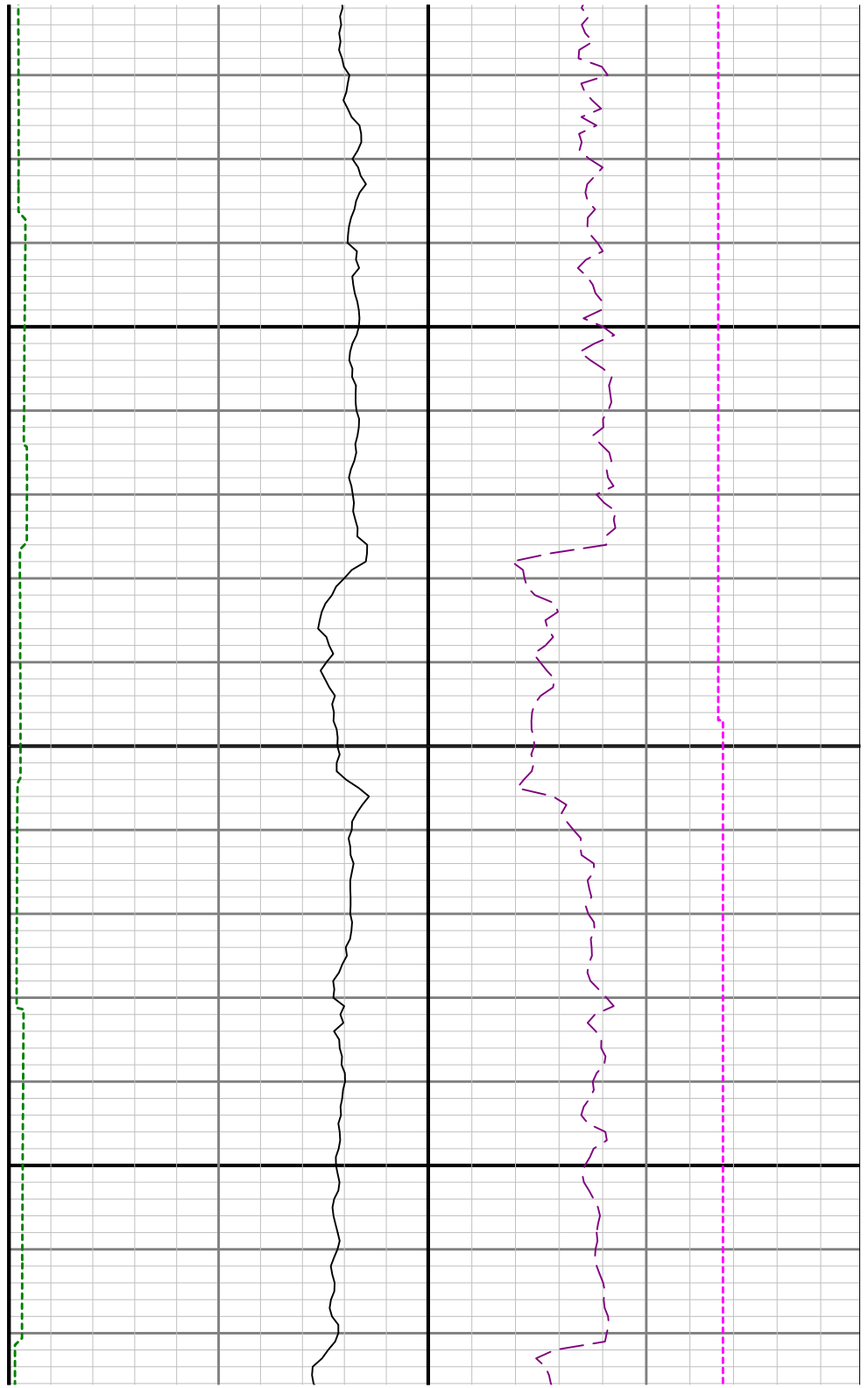


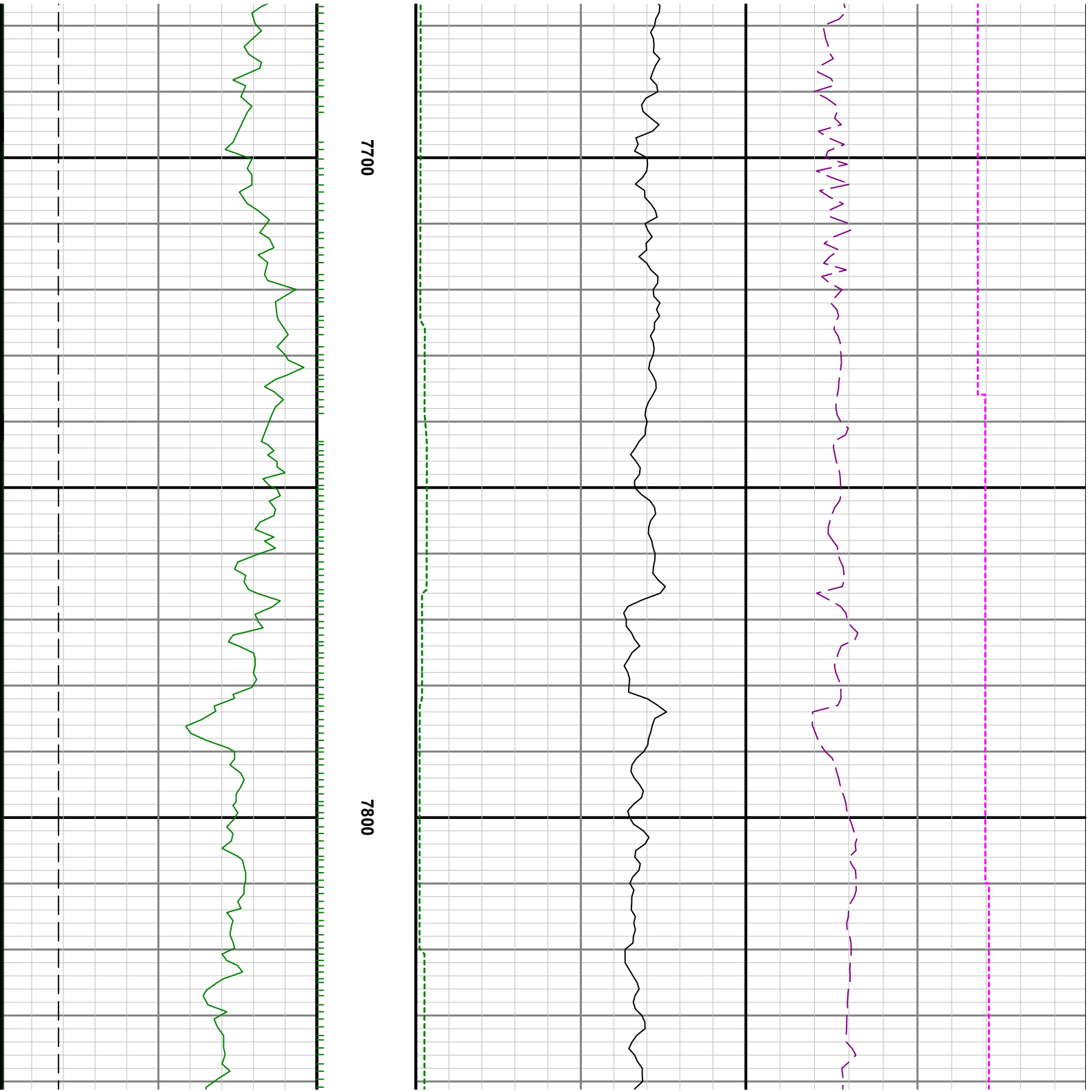


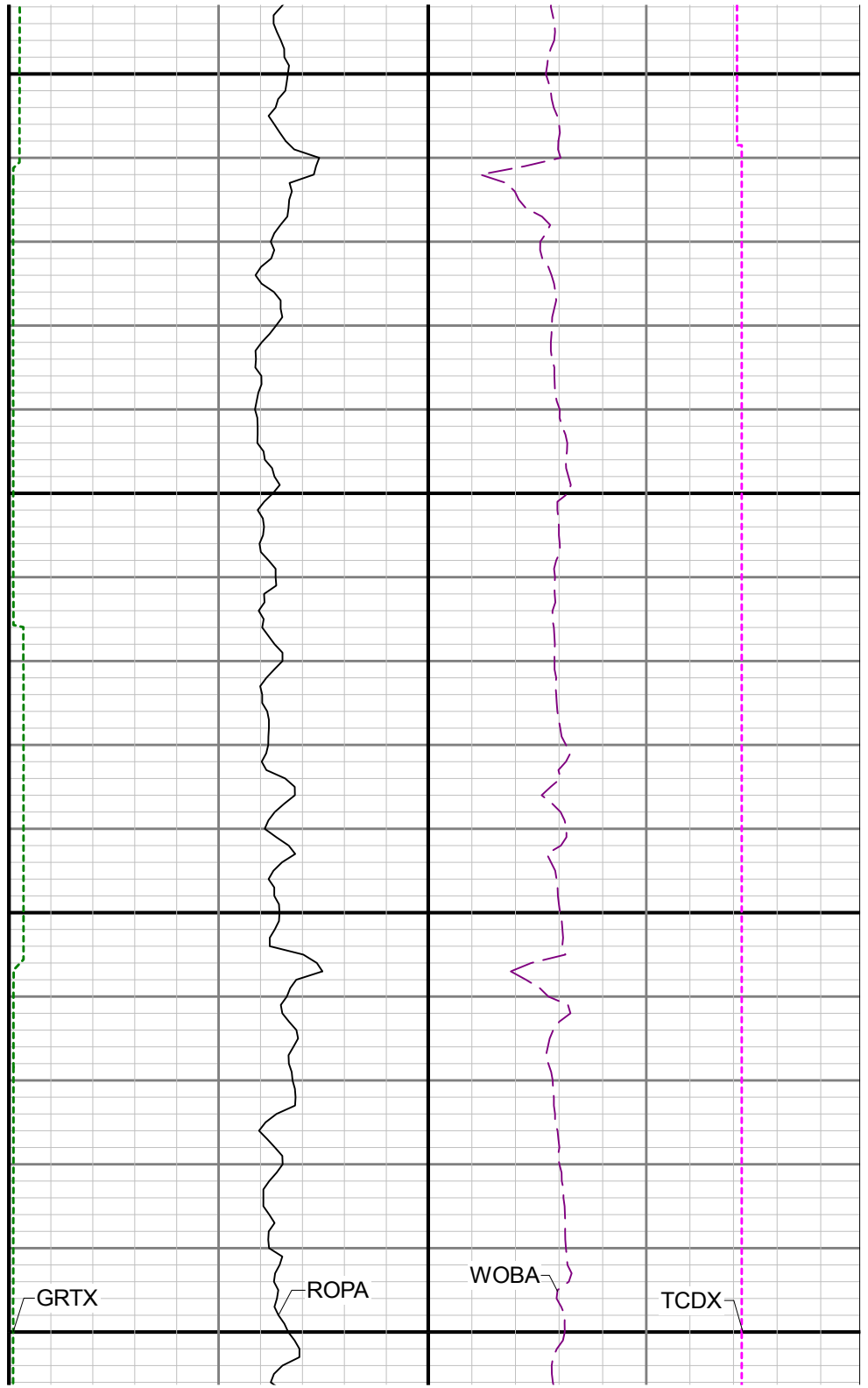
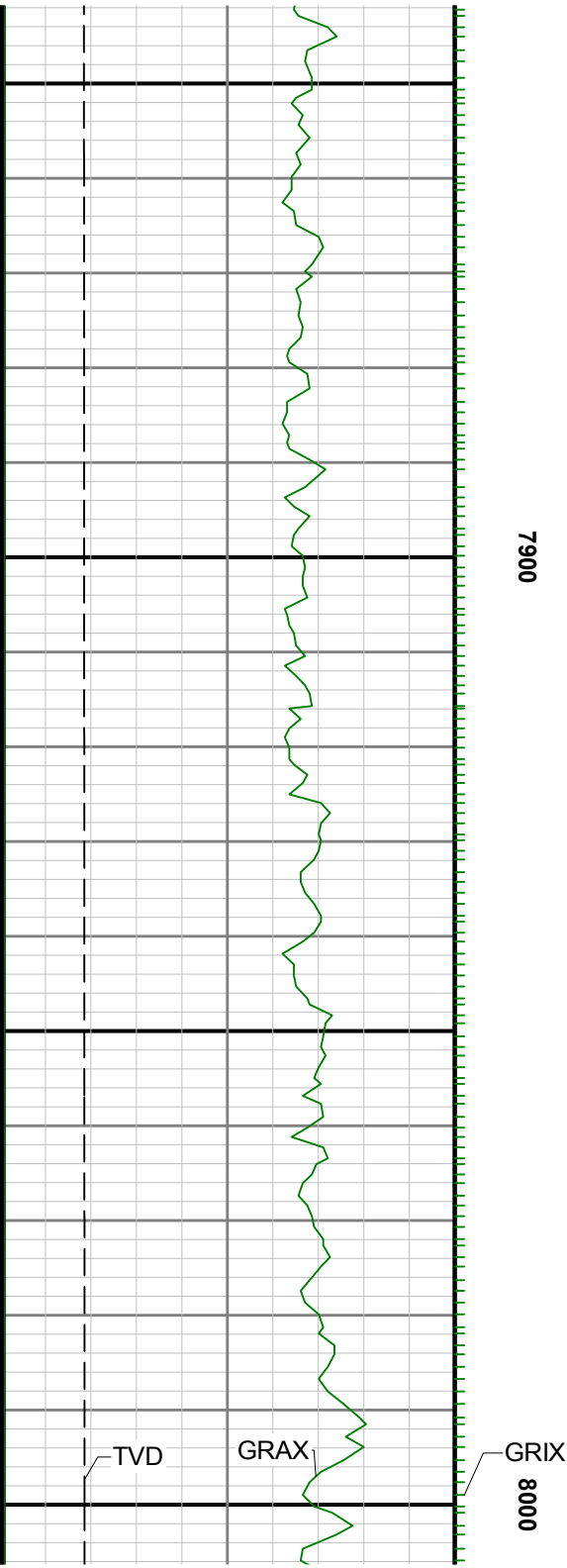


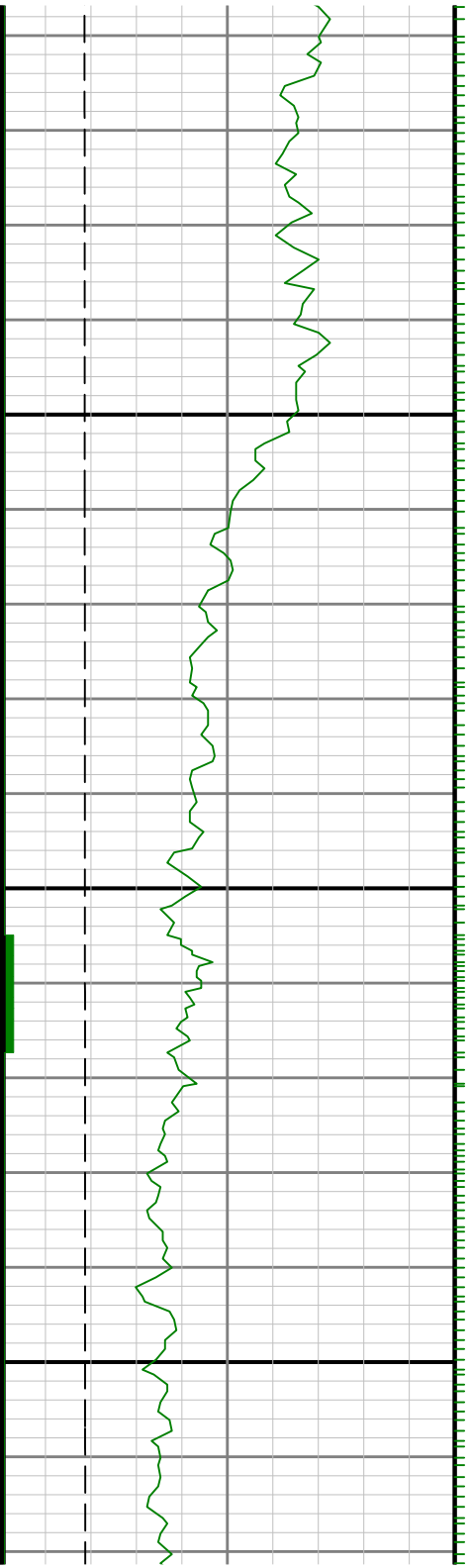


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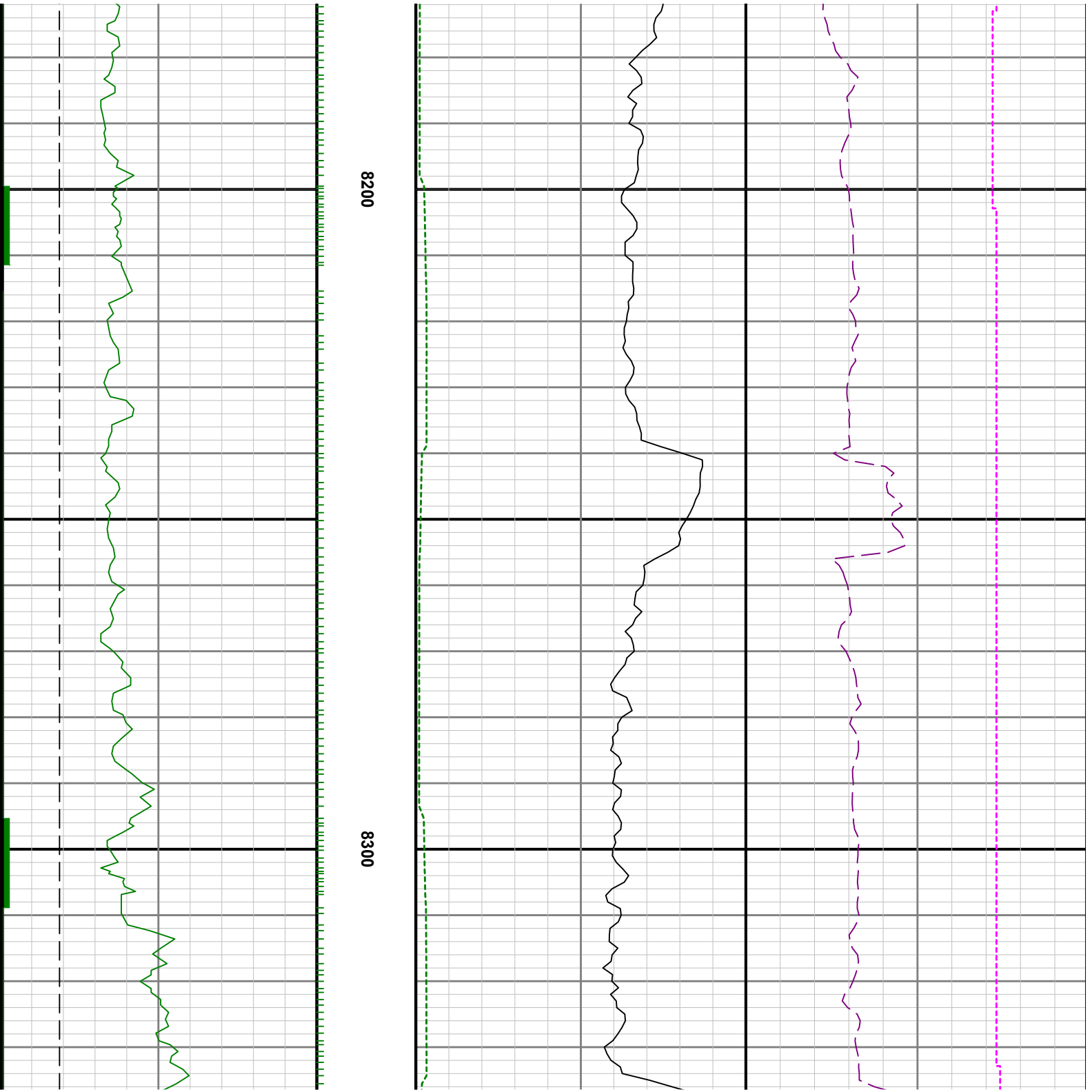


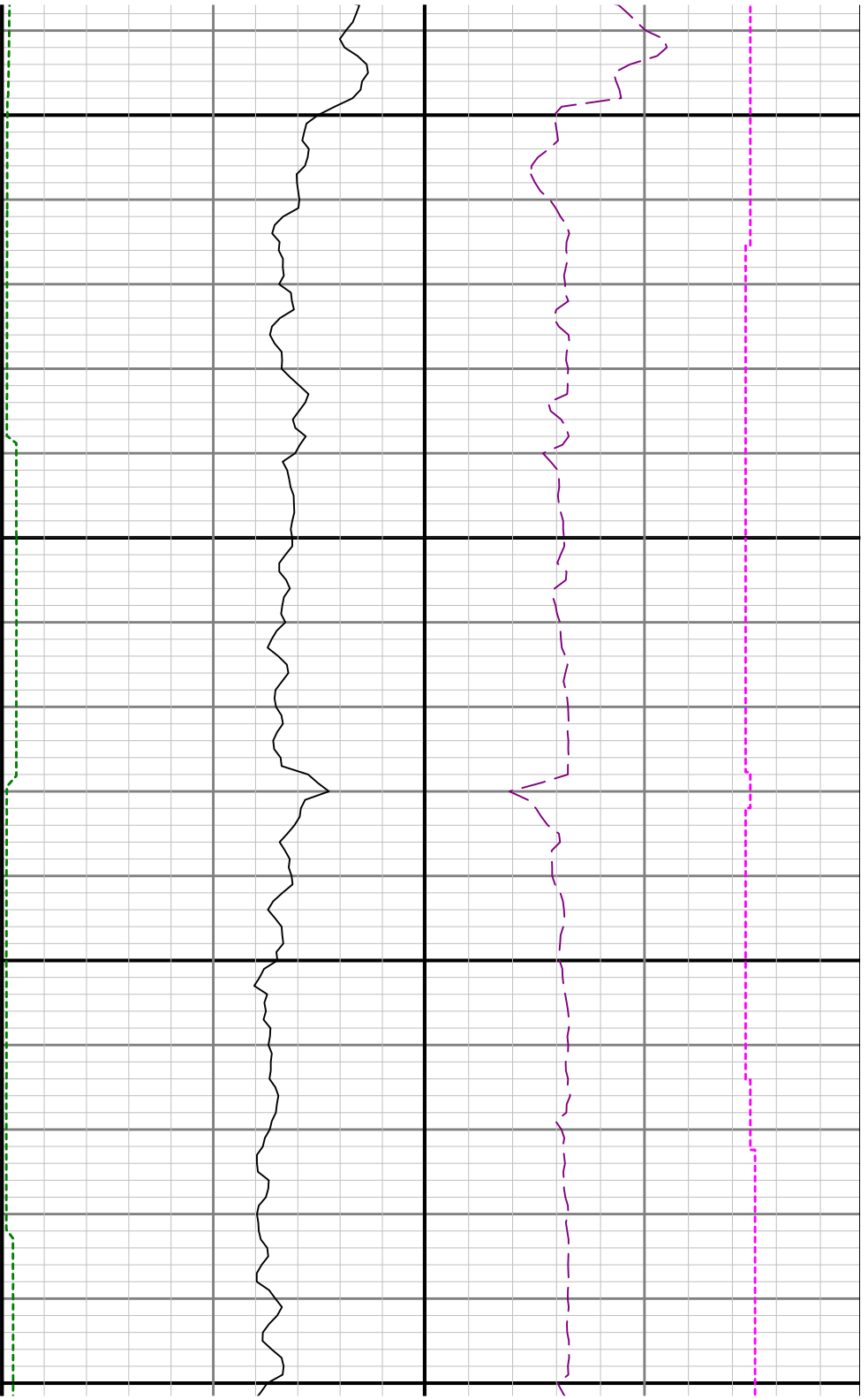


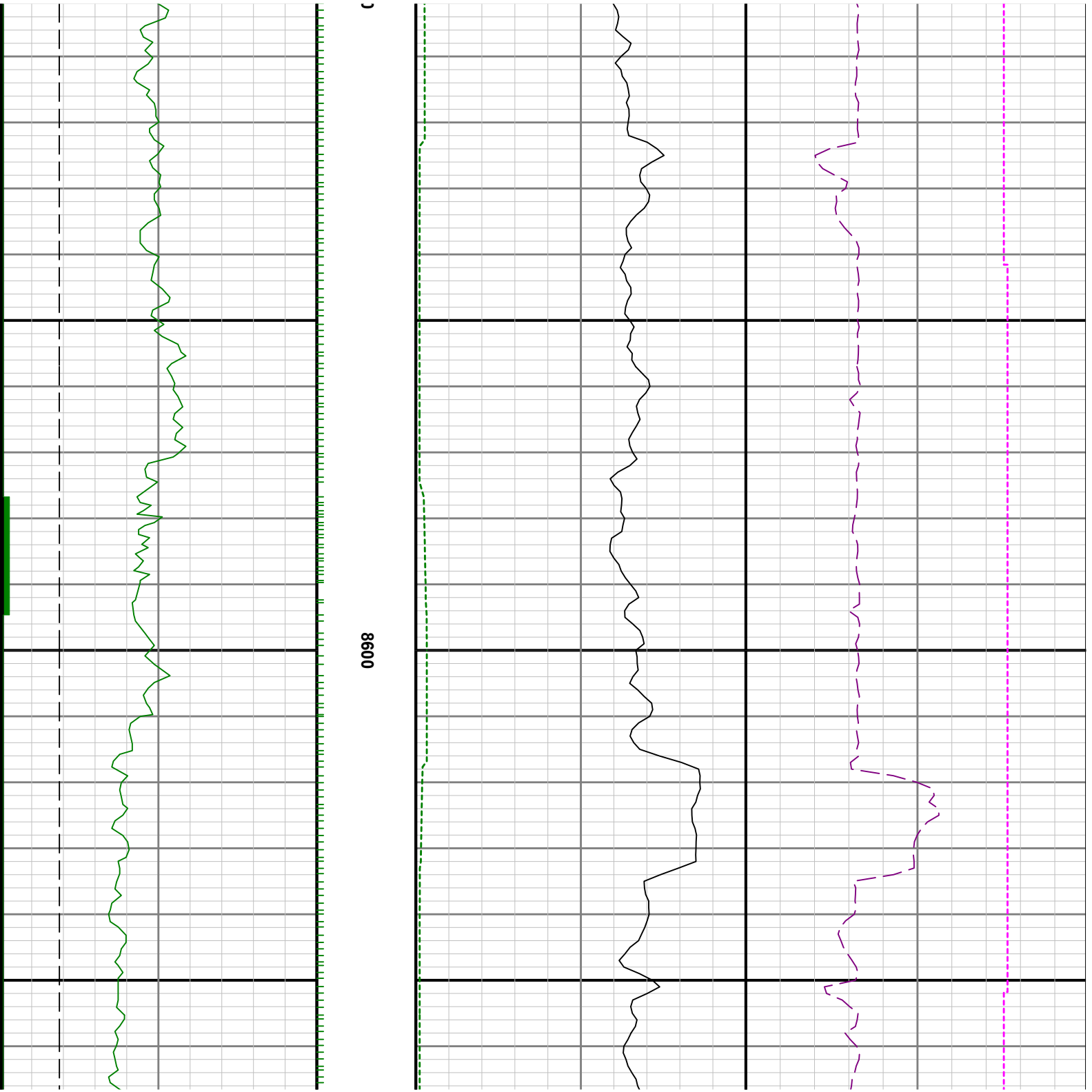
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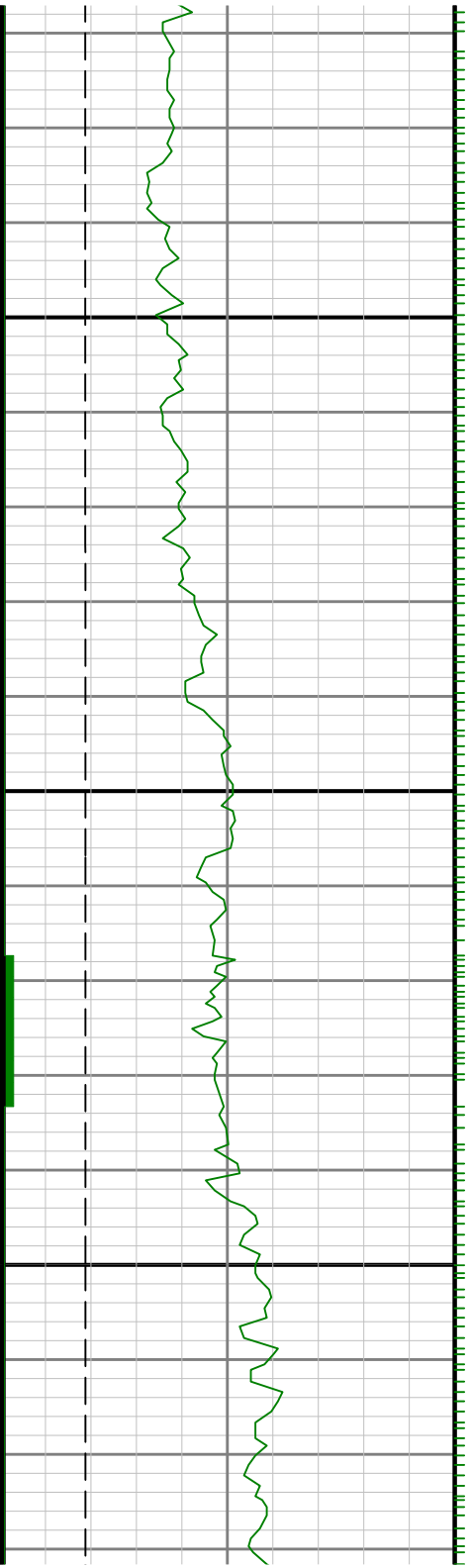






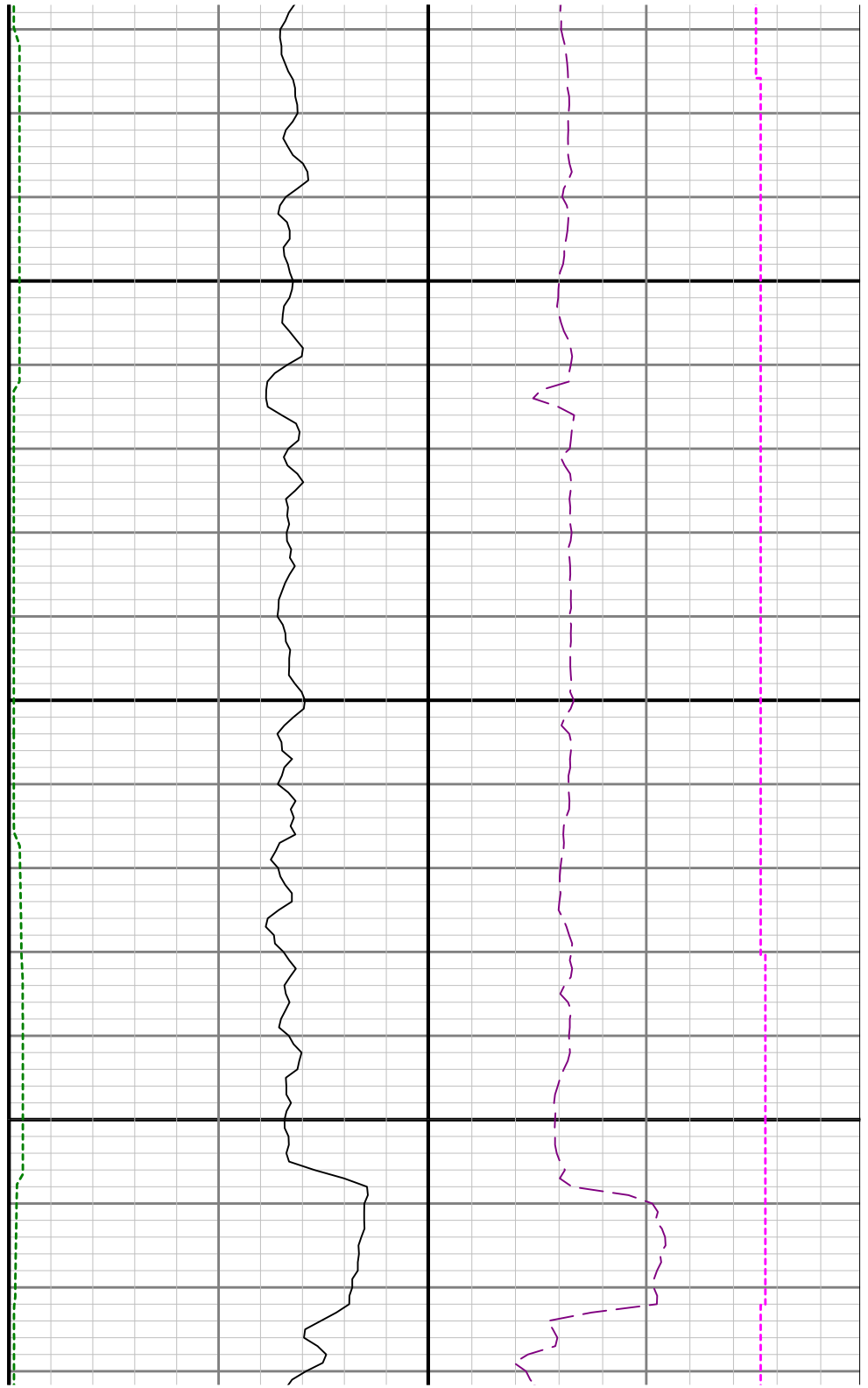


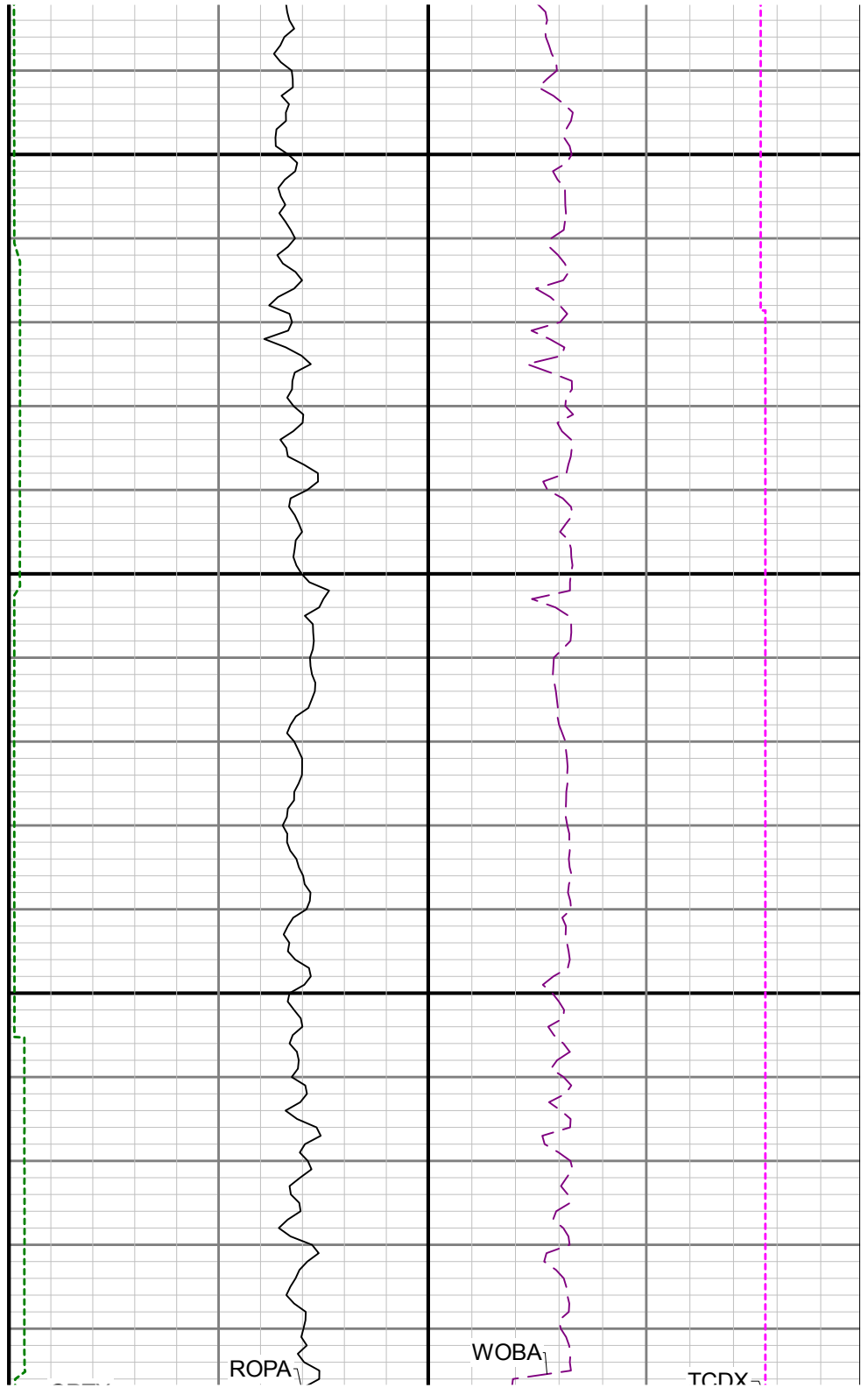
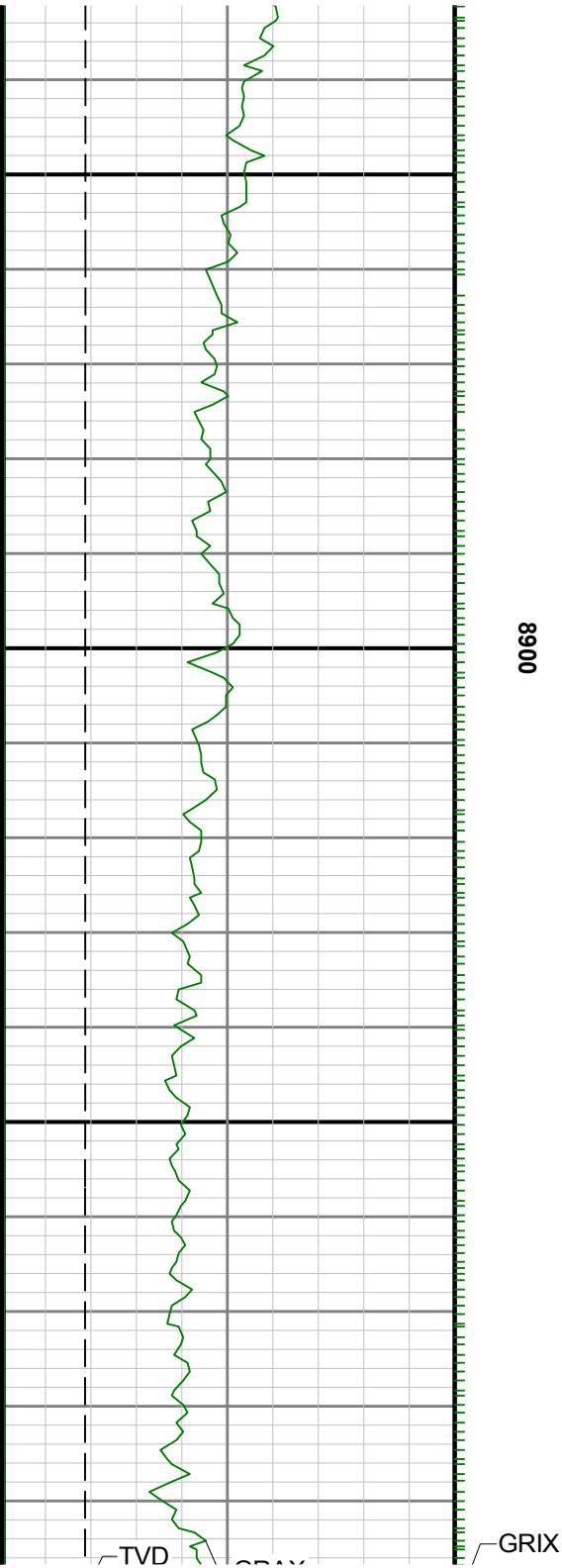


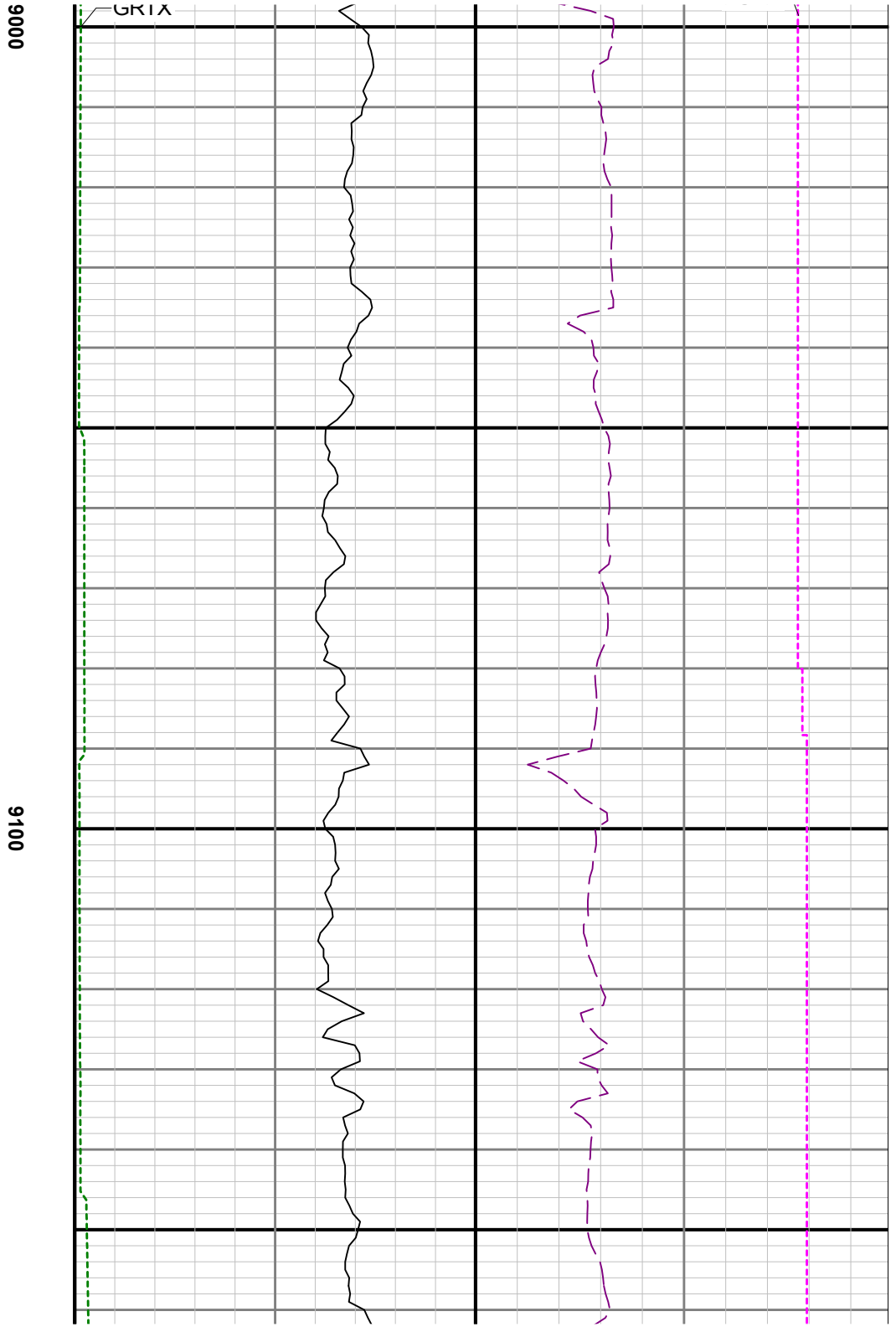
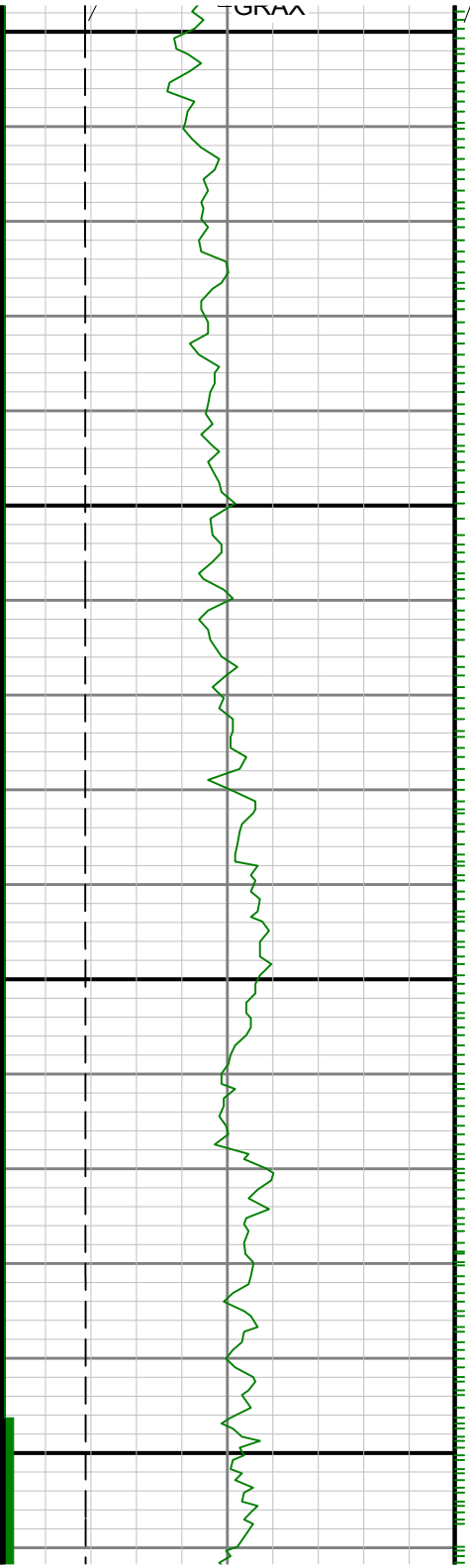


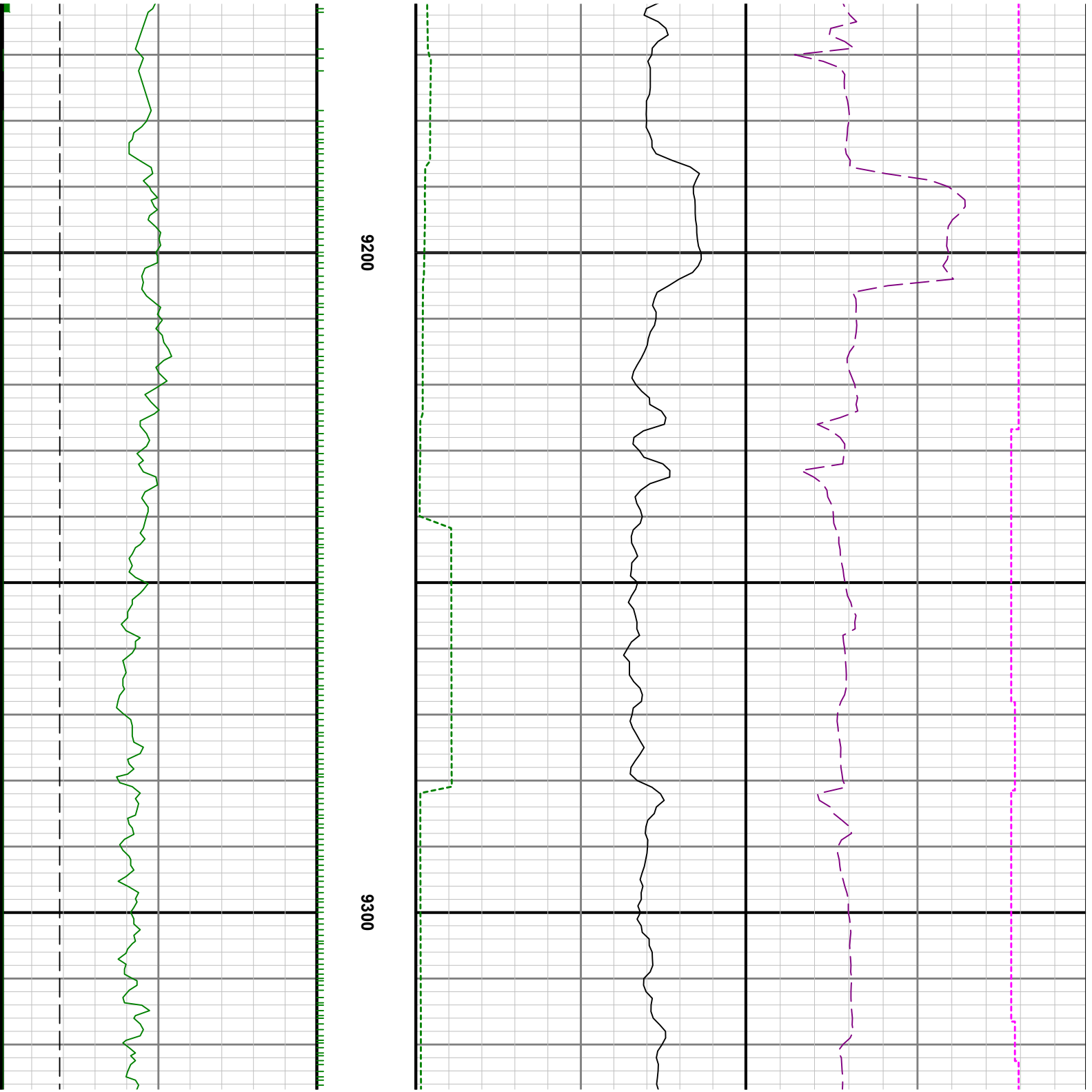
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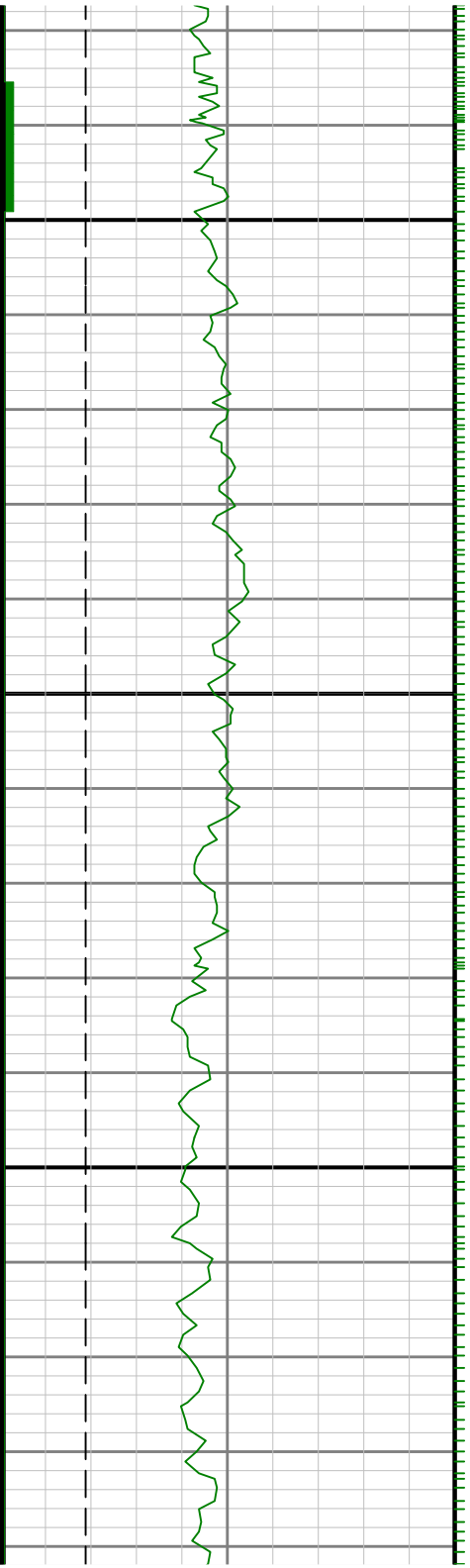
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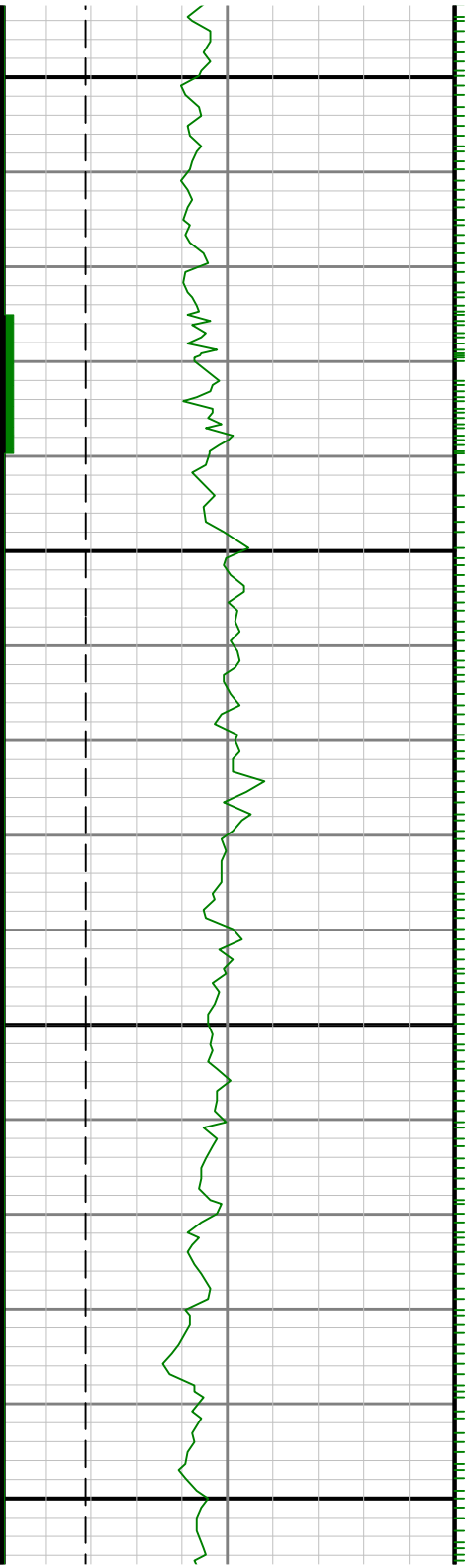




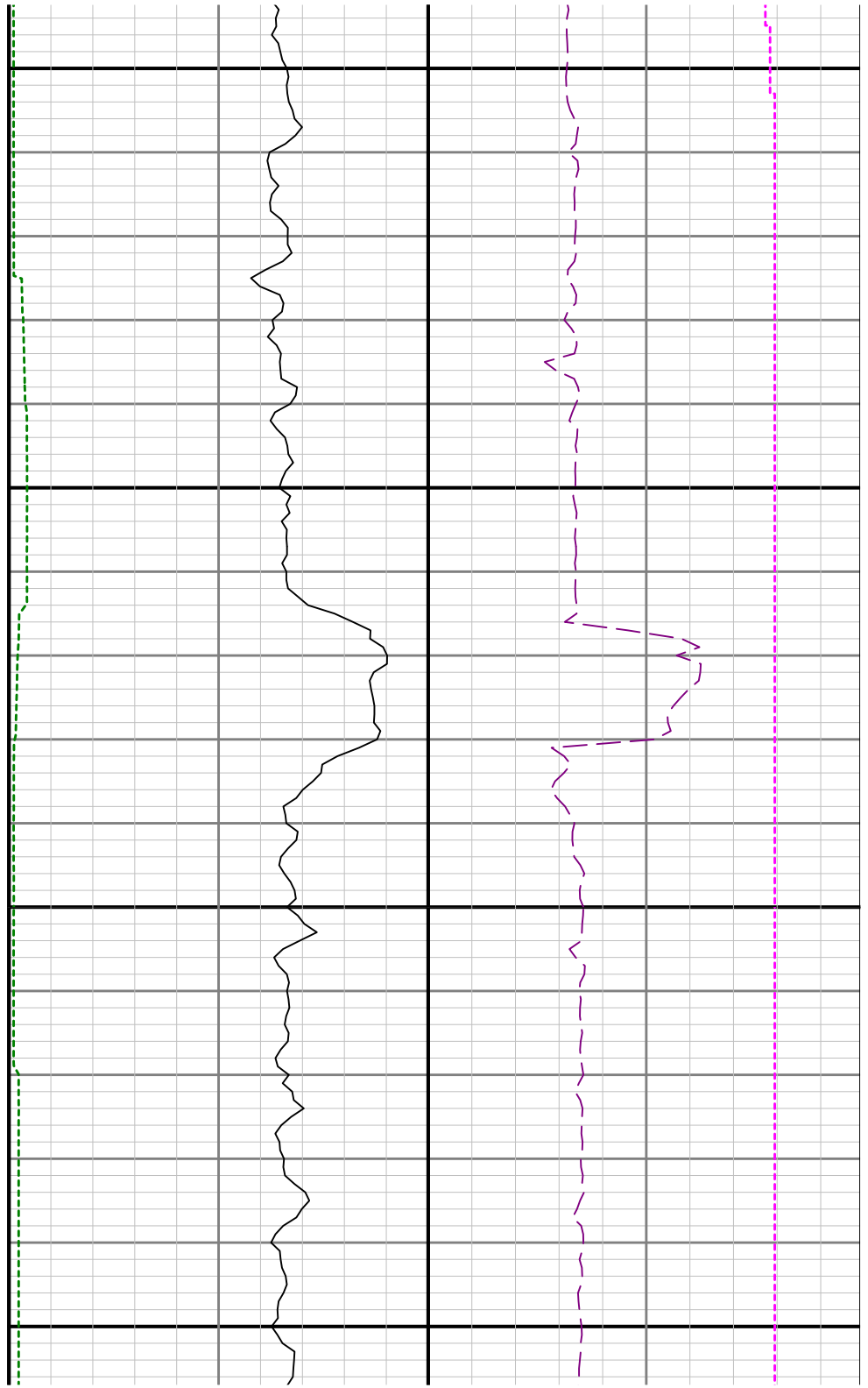
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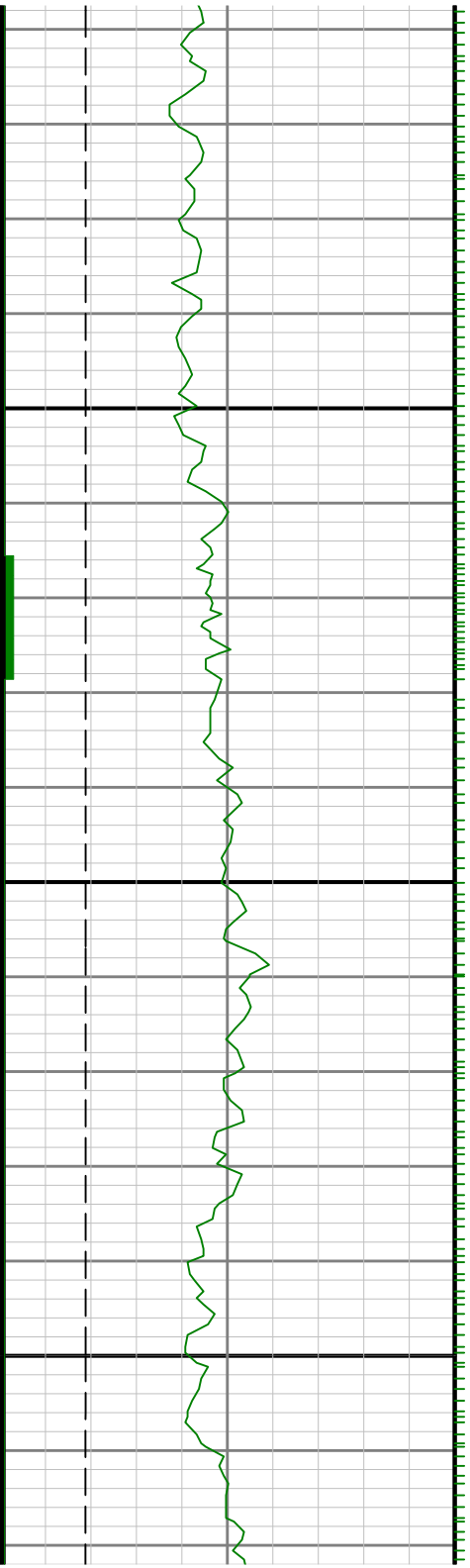






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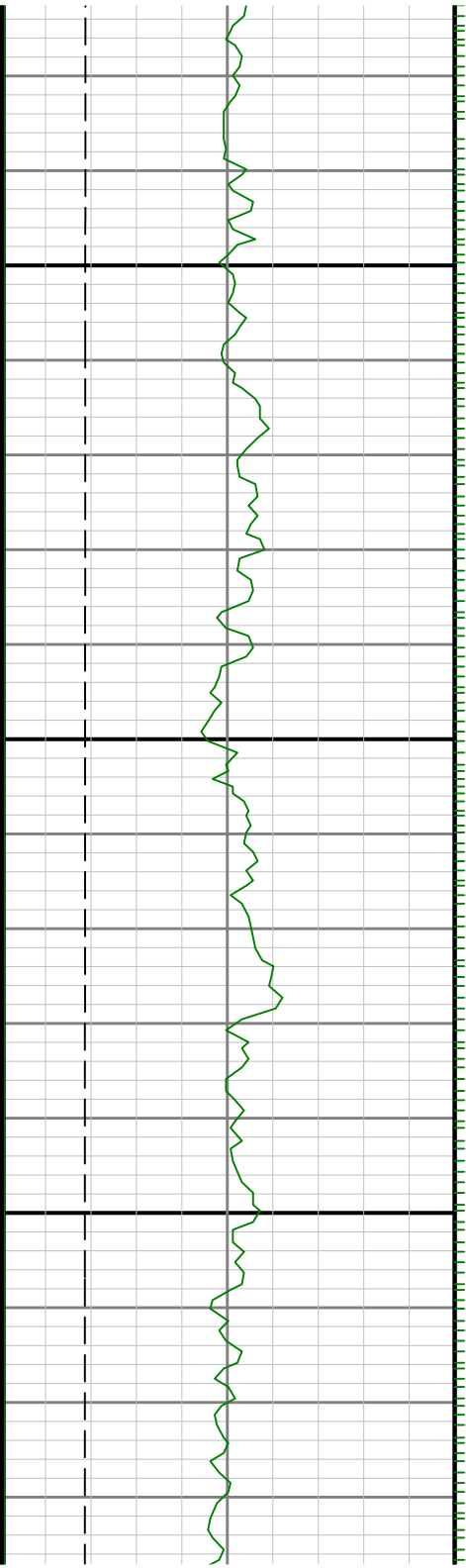




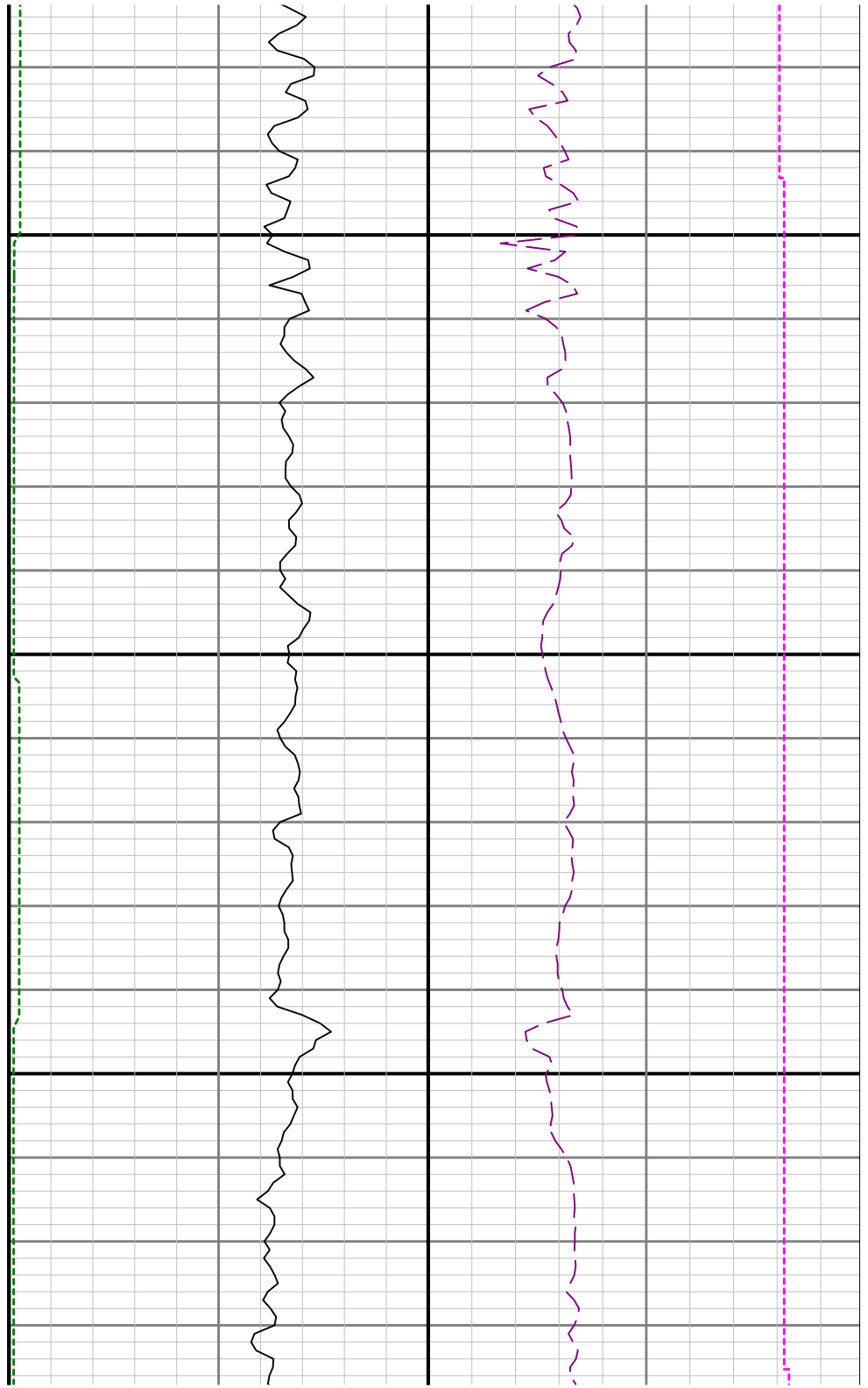
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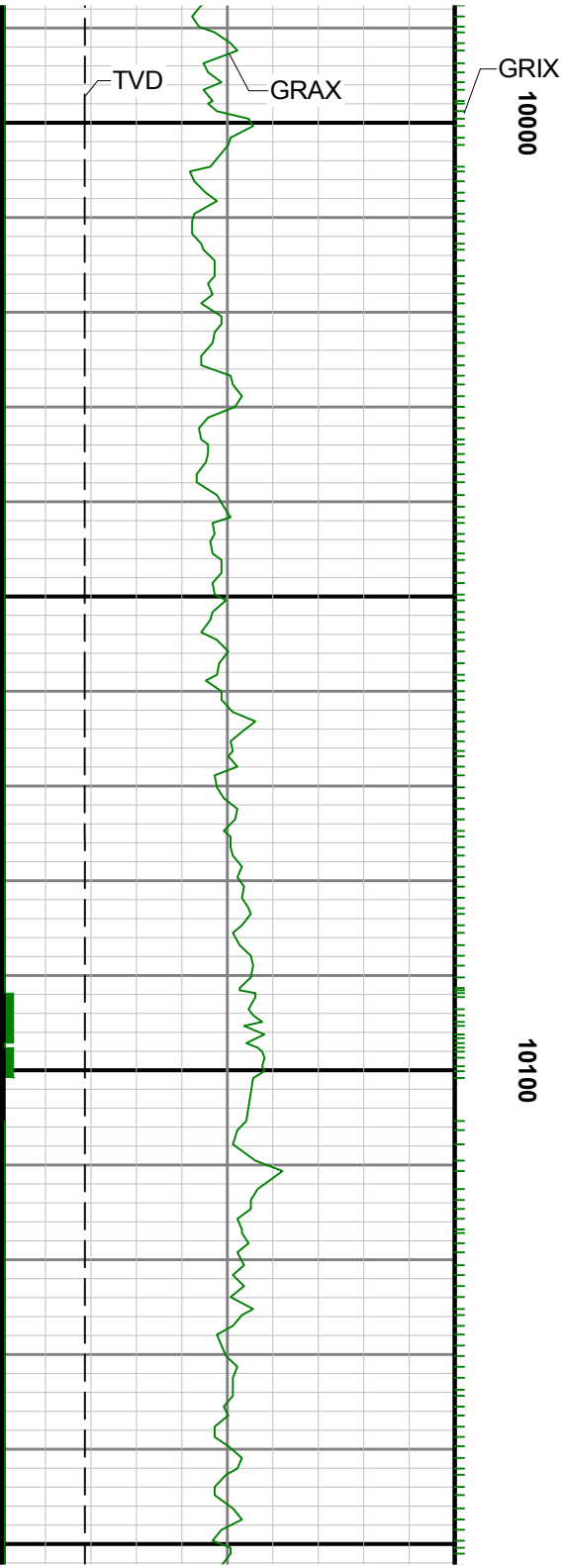
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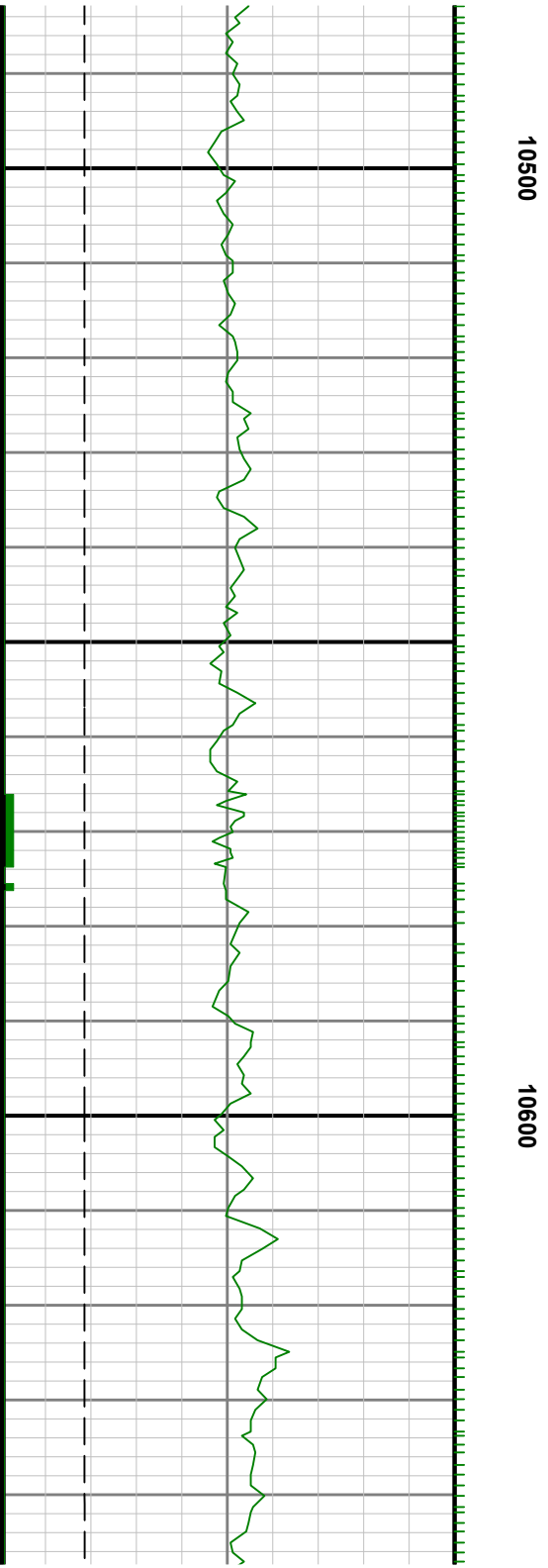
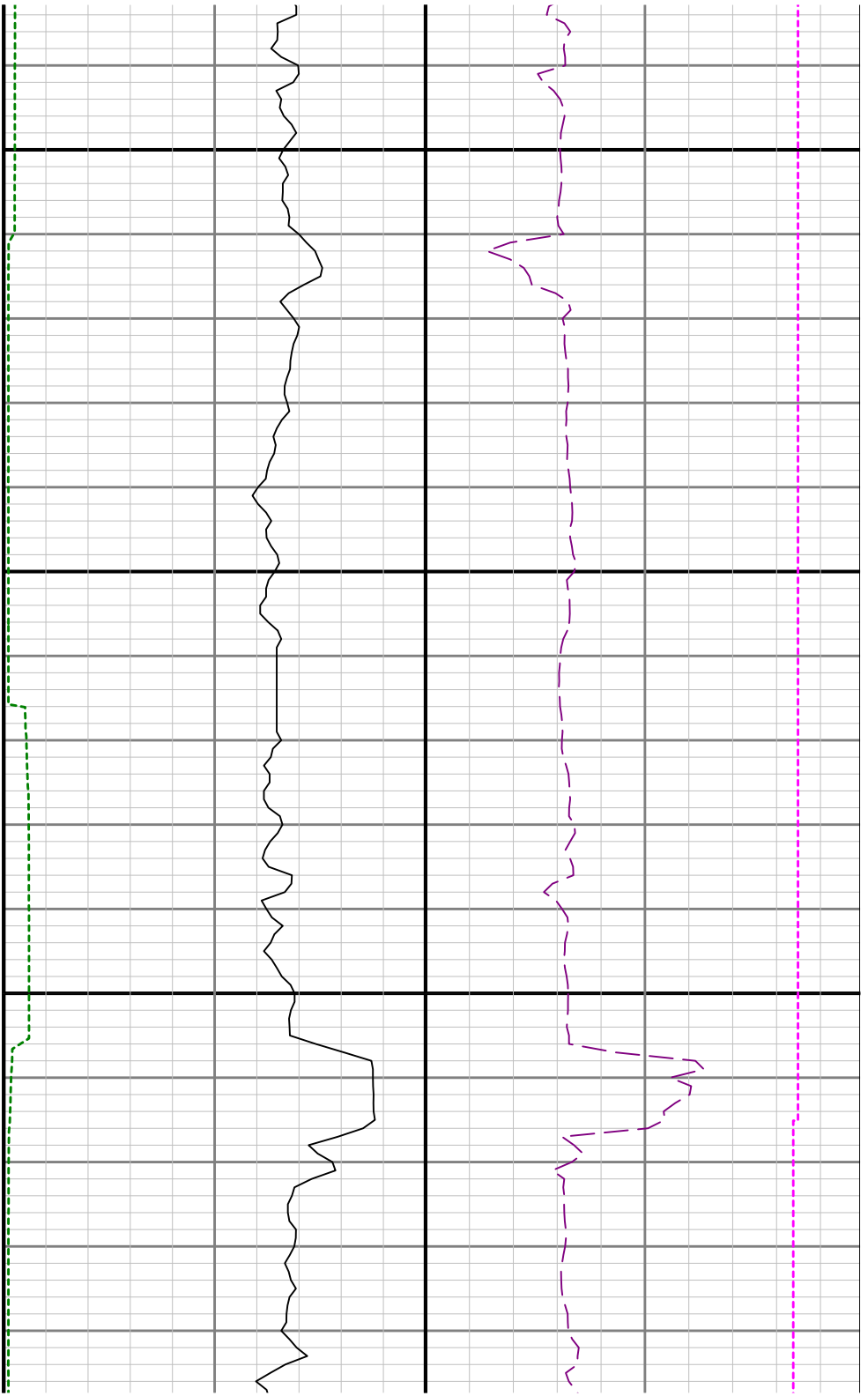
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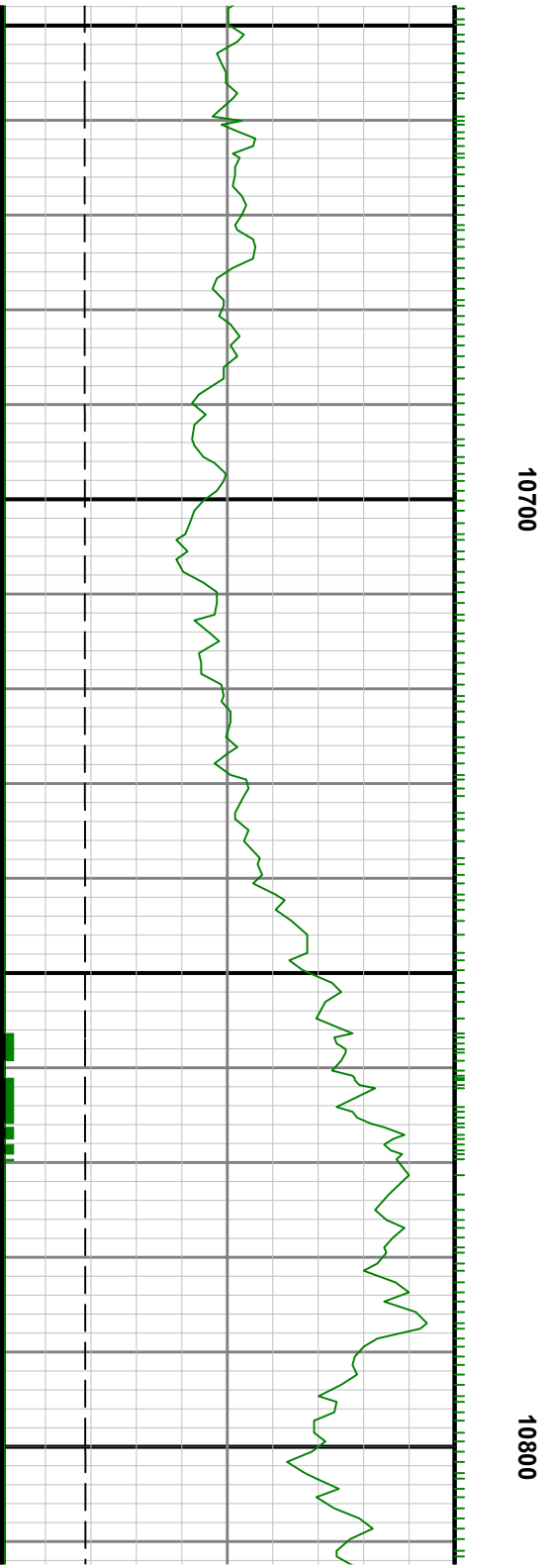
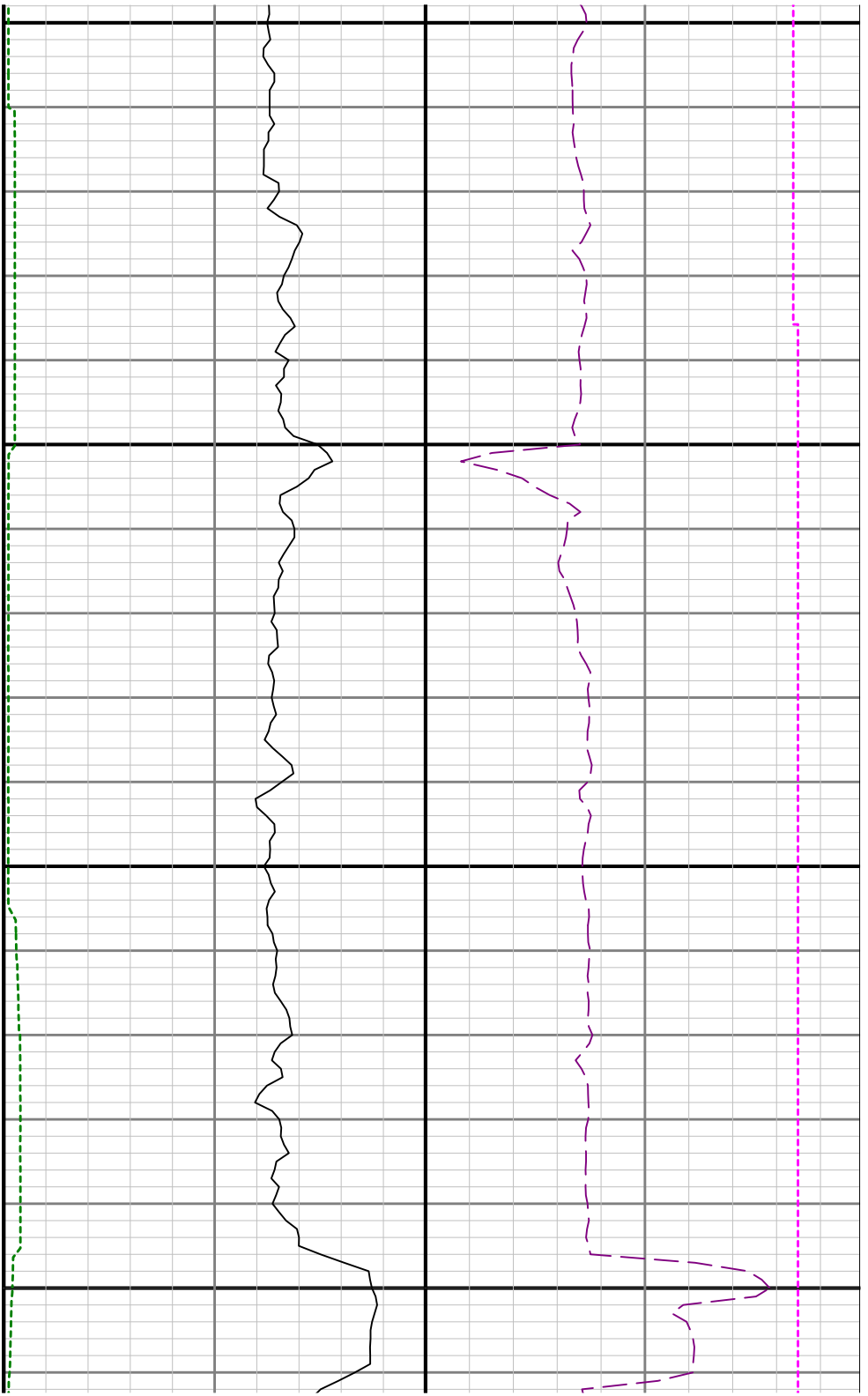




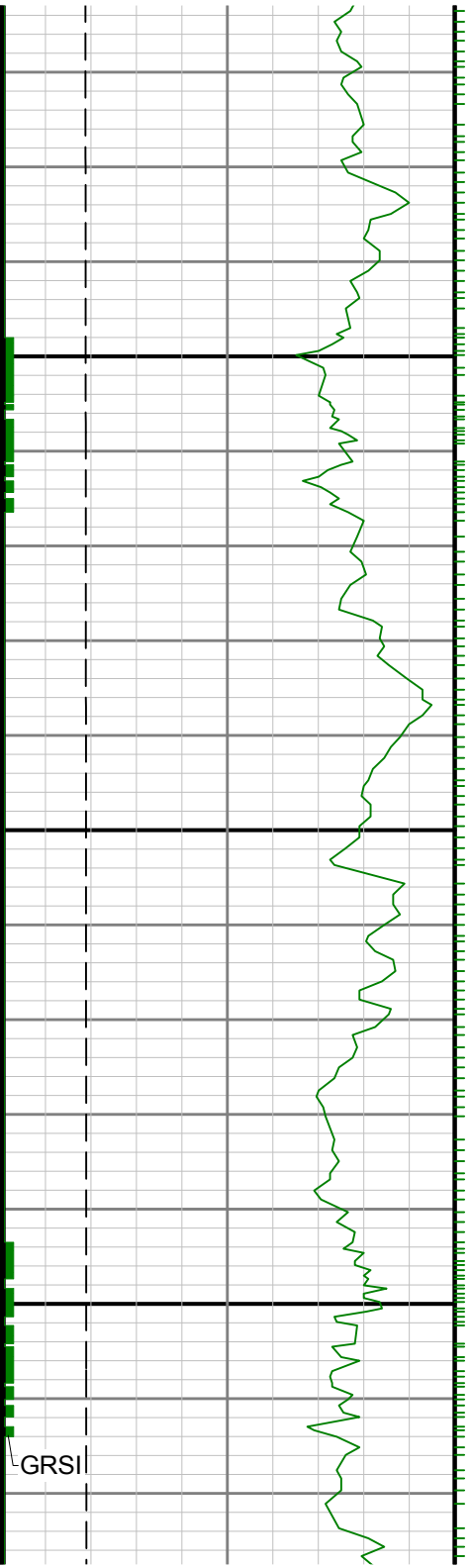






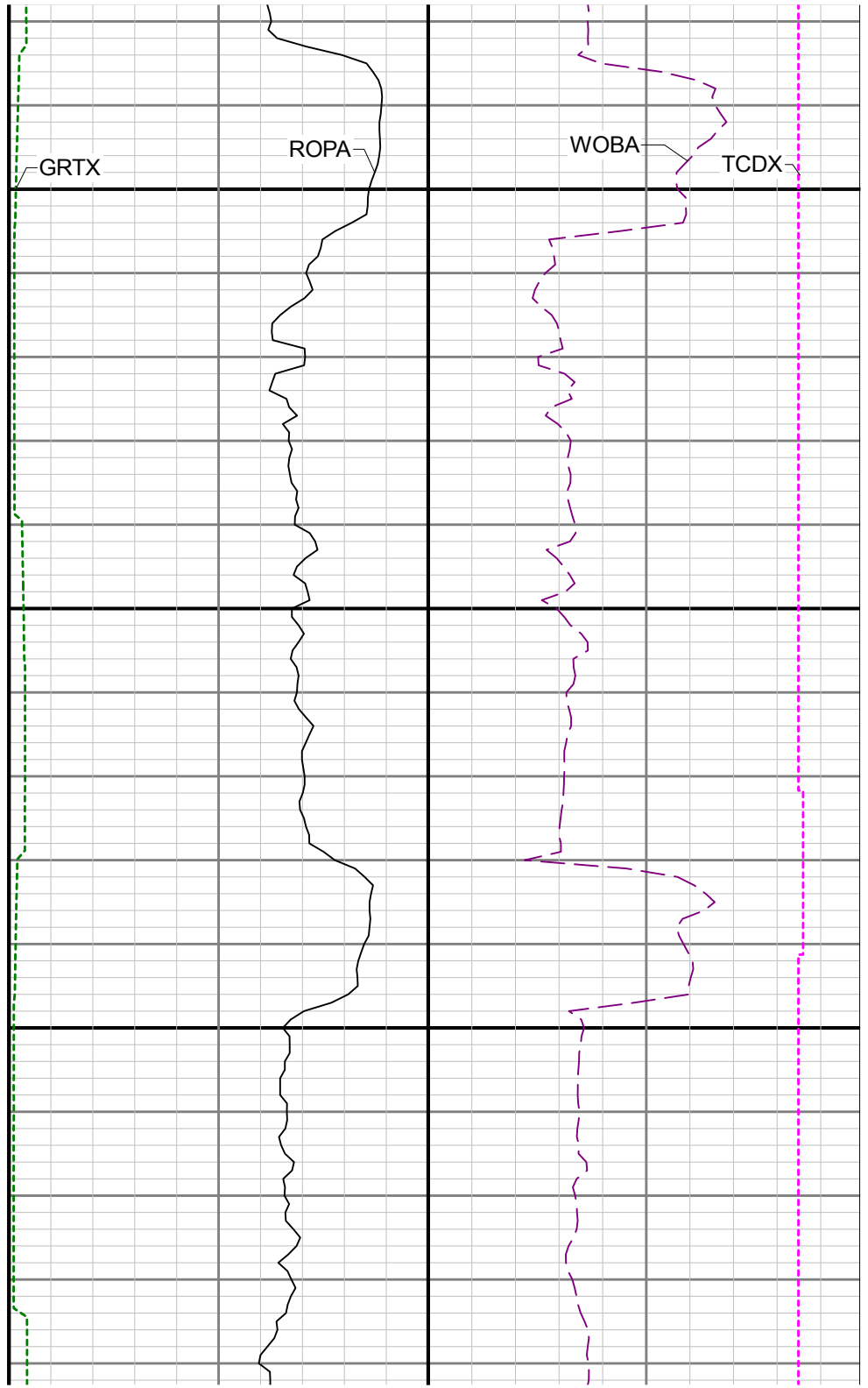
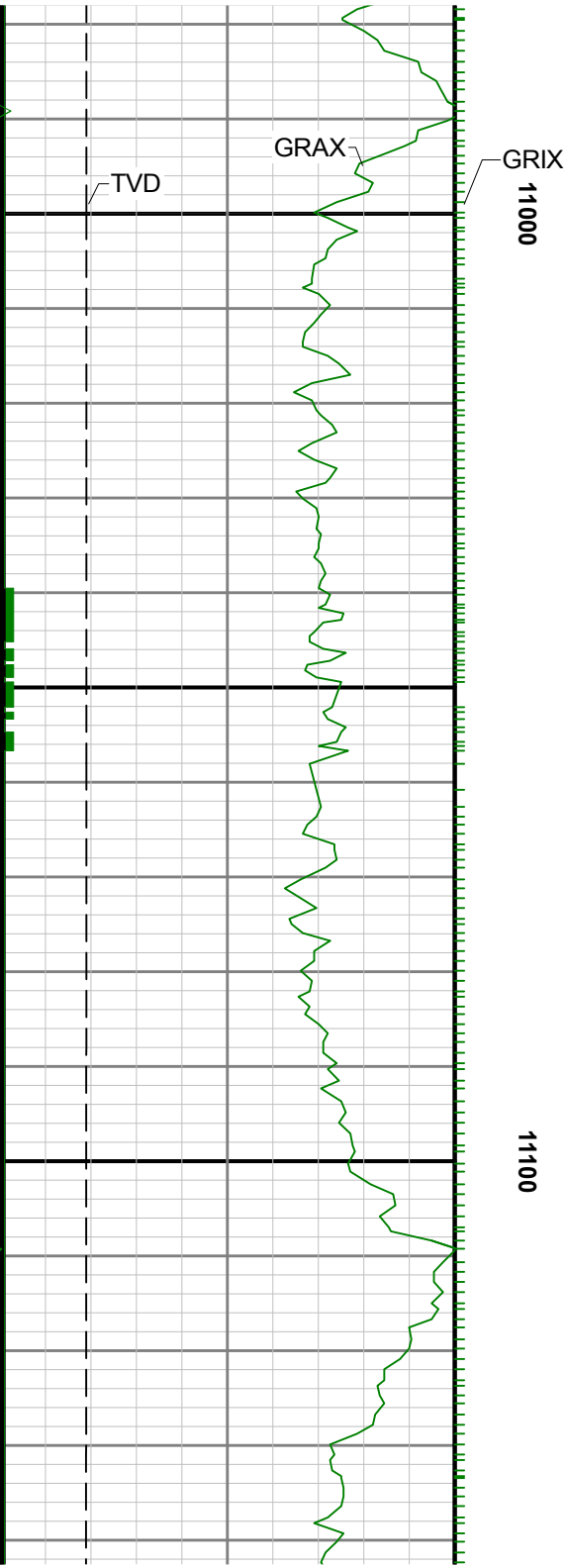


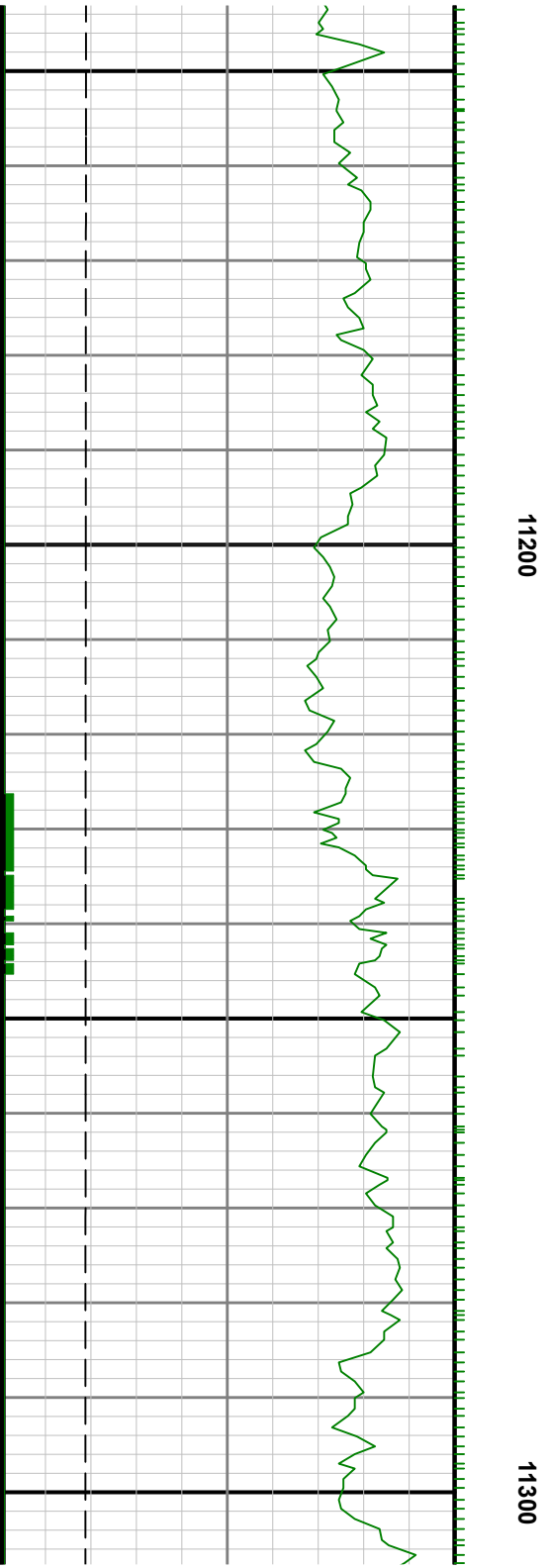
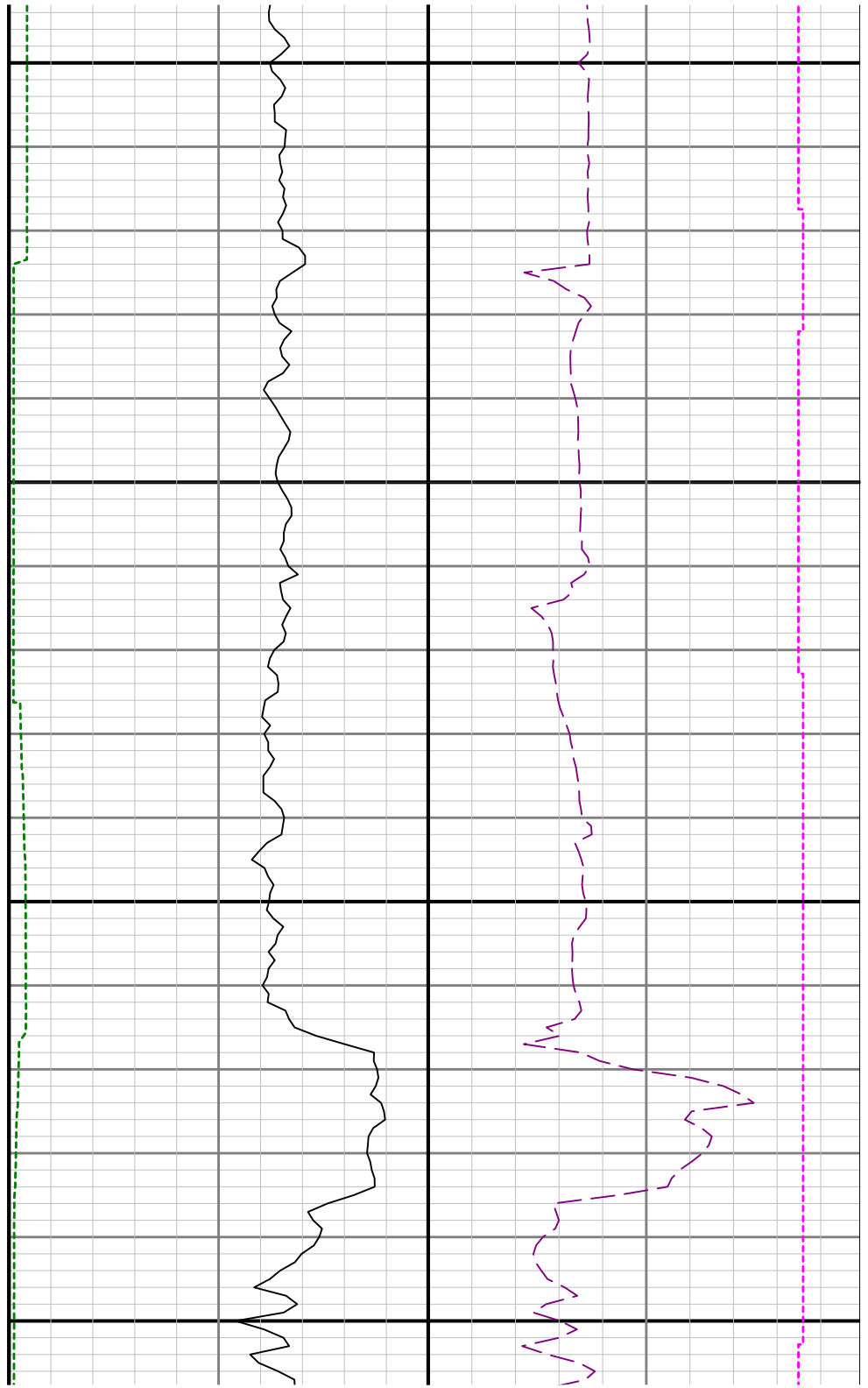


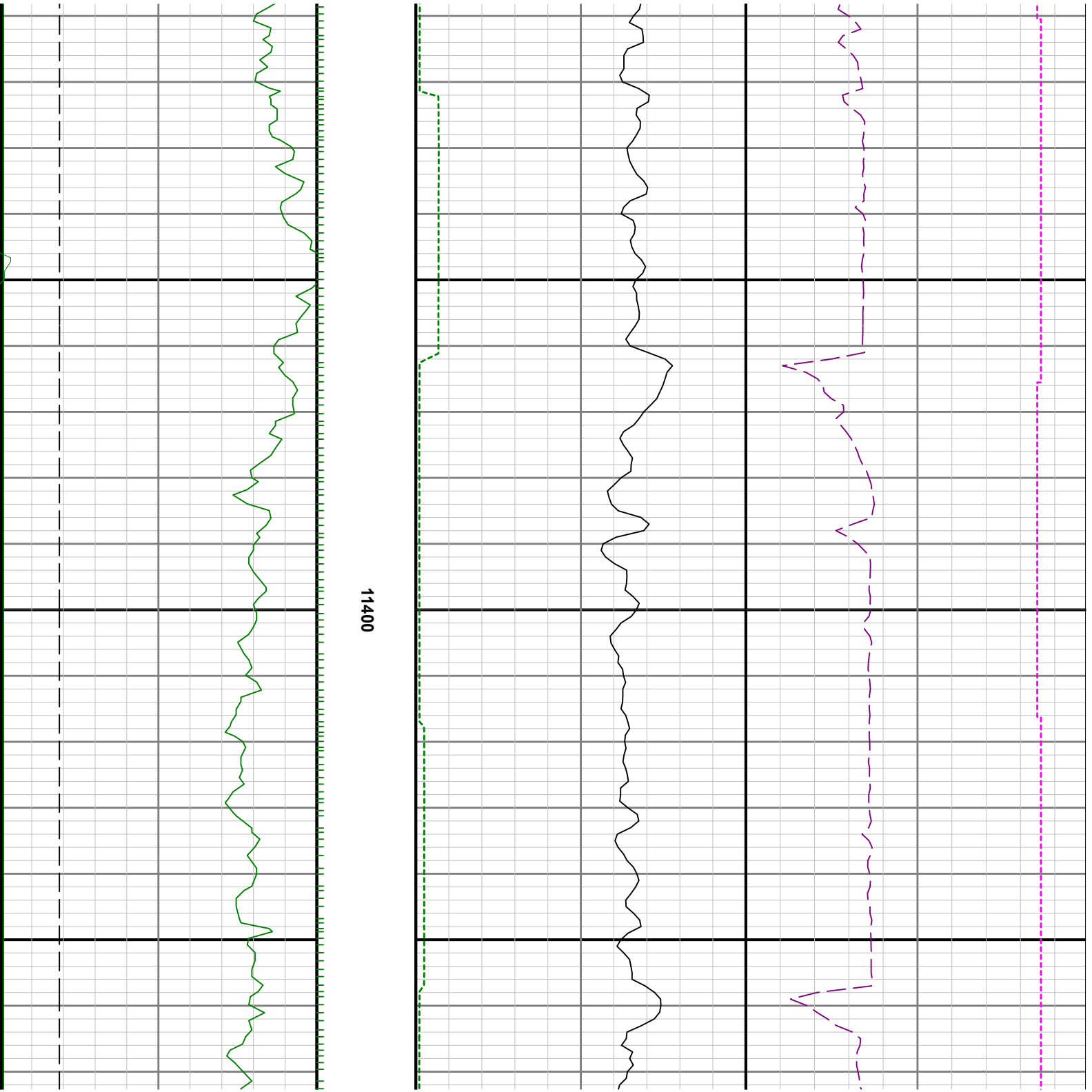


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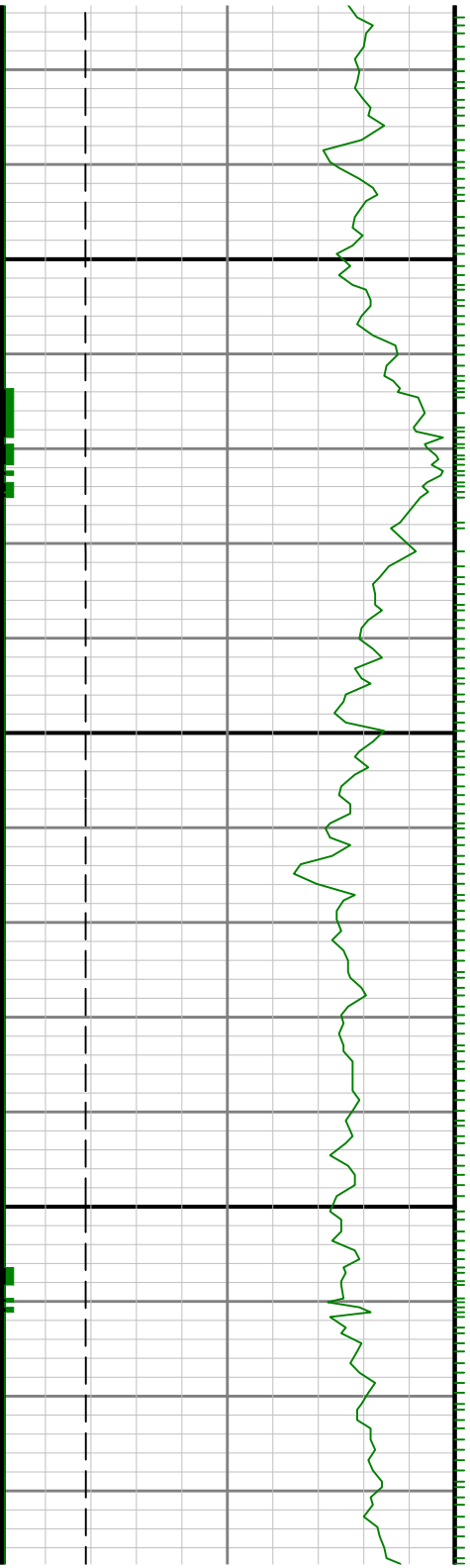


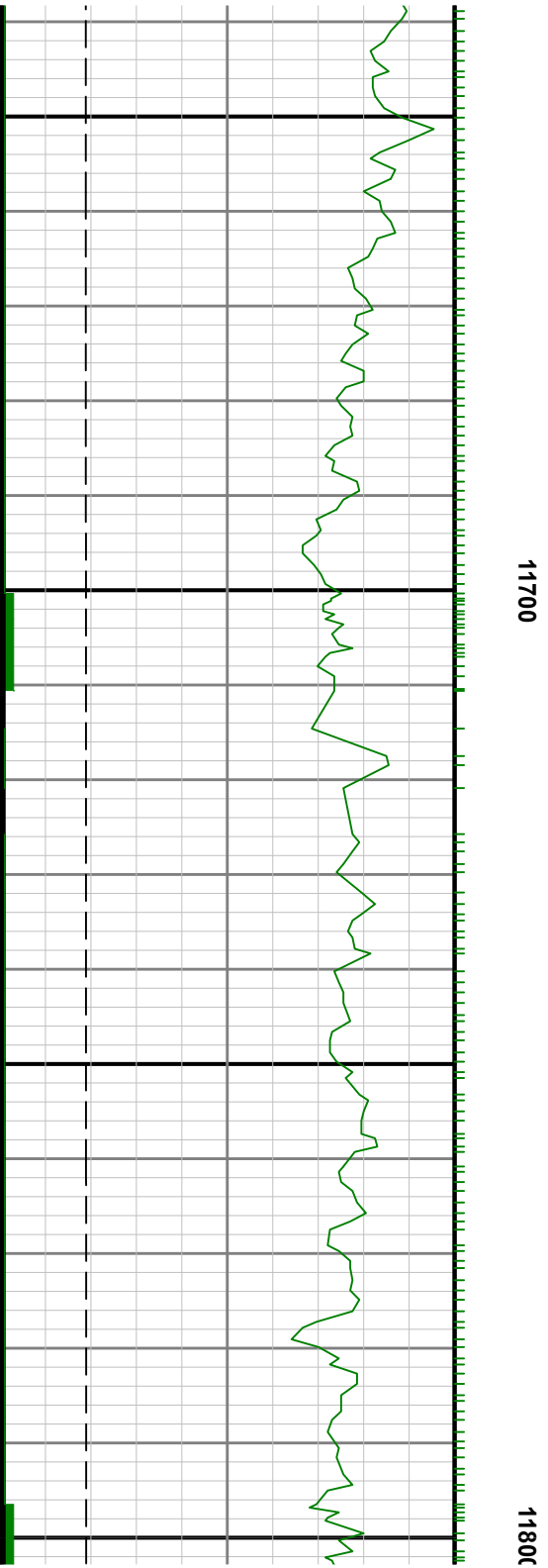


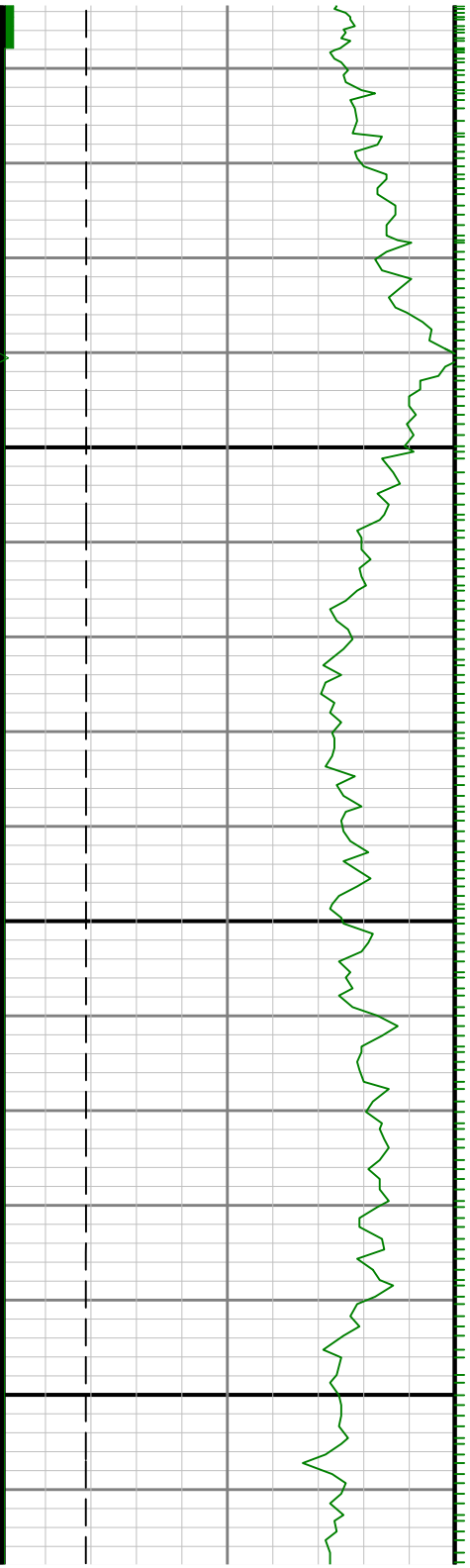


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11600







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